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     (FILE 'HOME' ENTERED AT 08:56:25 ON 23 JUN 2007)

     FILE 'CAPLUS, MEDLINE' ENTERED AT 08:56:48 ON 23 JUN 2007
L1             3 S NUCLEIC ACID? (P) POLYCATIONIC (P) ISOLAT?
L2             2 S NUCLEIC ACID? (P) POLYCATIONIC (P) PRECIPIT?
L3             2 S NUCLEIC ACID? (P) ?DIALLYLAMMONIUM (P) ISOLAT?
L4             1 S NUCLEIC ACID? (P) ?DIALLYLAMMONIUM (P) PRECIPI?
L5            70 S NUCLEIC ACID? (P) ?AMMONIUM (P) PRECIPI?
L6             2 S L5 AND CELL LYSATE?
L7             6 S L5 AND CATIONIC?
L8            41 S L5 AND POLY?
L9             5 S L8 AND QUATERN?
L10           36 S L8 NOT L9
L11            0 S L10 AND IONENE?
L12            0 S L10 AND ?PYRIDINIUM?
L13           54 S NUCLEIC ACID? (P) POLYCATIONIC (P) COMPLEX?
L14            1 S L13 AND PURI?
L15            0 S L13 AND CELL LYSATE?
L16           29 S L13 AND PROTEIN?
L17           25 S L13 NOT L16
L18            1 S NUCLEIC ACID? (P) POLYCATION (P) PRECIPIT?
L19            5 S NUCLEIC ACID? (P) POLYCATION (P) ISOLAT?
L20            0 S NUCLEIC ACID? (P) POLYCATIONS (P) PRECIPI?
L21            5 S NUCLEIC ACID? (P) ?POLYMER? (P) CHARGE? (P) PRECIPI?
L22           10 S NUCLEIC ACID? (P) PEI (P) PRECIPI?
L23            0 S NUCLEIC ACID? (P) DMDAAC
L24           14 S PLASMID? (P) POLYCATION? (P) ISOLAT?
L25            4 S PLASMID? (P) POLYCATION? (P) PRECIPI?
L26            2 S NUCLEIC ACID? (P)  "POLY(N-ETHYL-4-VINYLPYRIDINIUM BROMIDE)"
L27            7 S NUCLEIC ACID? (P) ?VINYLPYRIDINIUM?
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L1 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2007:293233 CAPLUS
TITLE: Characterizing the interactions between the antimicrobial peptide buforin II and nucleic acids with molecular dynamics simulations
AUTHOR(S): Elmore, Donald E.; Uyterhoeven, Erika T.; Ko, Danette; Butler, Chase H.
CORPORATE SOURCE: Department of Chemistry, Wellesley College, Wellesley, MA, 02481, USA
SOURCE: Abstracts of Papers, 233rd ACS National Meeting, Chicago, IL, United States, March 25-29, 2007 (2007), COMP-118. American Chemical Society: Washington, D. C.
CODEN: 69JAUY
DOCUMENT TYPE: Conference; Meeting Abstract; (computer optical disk)
LANGUAGE: English
AB Buforin II is a potent 21-amino acid polycationic antimicrobial peptide originally isolated from the toad Bufo bufo gargarizans. Previous researchers have hypothesized that buforin II kills bacteria by crossing the cell membrane and interacting with nucleic acids. To obtain mol.-level insight into these proposed interactions, we developed a homol. model of the buforin-DNA complex based on a histone crystal structure. We then utilized mol. dynamics simulations to refine this model and predict the interactions between specific buforin residues and DNA. These simulations implied that specific pos. charged buforin residues interact with DNA. We exptl. verified the pattern of these interactions by using a fluorescent intercalator assay to measure how strongly a series of buforin mutants bound DNA. These mol. models of the buforin-DNA complex provide a useful starting point for investigating the antimicrobial mechanism of buforin on the mol. level.

L1 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:20859 CAPLUS
DOCUMENT NUMBER: 140:54473
TITLE: Methods for isolating nucleic acids using a polycationic polymer as precipitation agent
INVENTOR(S): Galaev, Igor Yurii; Gustavsson, Per-Erik; Izumrudov, Vladimir A.; Larsson, Per-Olof; Wahlund, Per-Olof
PATENT ASSIGNEE(S): Amersham Biosciences AB, Swed.
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004003200	A1	20040108	WO 2003-SE1127	20030626
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2488616	A1	20040108	CA 2003-2488616	20030626
AU 2003243108	A1	20040119	AU 2003-243108	20030626

EP 1517990	A1	20050330	EP 2003-761887		20030626
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK					
JP 2005531329	T	20051020	JP 2004-548907		20030626
US 2005222404	A1	20051006	US 2005-517227		20050518
PRIORITY APPLN. INFO.:			SE 2002-2074	A	20020628
			SE 2003-1034	A	20030408
			WO 2003-SE1127	W	20030626

AB The present invention relates to a methods for isolating nucleic acids using polycationic polymers as precipitating agent. The polycationic precipitating agent is preferably added in such an amount that the charge ratio [+] / [-] between polycationic precipitating agent and nucleic acid is ≥ 0.5, preferably ≥ 0.9 and most preferably ≥1 during the precipitation, and in the presence of a salt concentration ensuring the quant. specific precipitation of the nucleic acid/polycation complex. These agents include Poly(N,N'-dimethyldiallylammonium chloride), aliphatic ionene bromide and Poly(N-alkyl-4-vinylpyridinium halide).

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1977:172177 CAPLUS
DOCUMENT NUMBER: 86:172177
TITLE: Polyanionic polymer complex containing nucleic acid base
INVENTOR(S): Seita, Toru; Shimizu, Akihiko; Kosaka, Yujiro
PATENT ASSIGNEE(S): Toyo Soda Mfg. Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
JP 51138790	A	19761130	JP 1975-62533		19750527
US 4119590	A	19781010	US 1977-809011		19770622
PRIORITY APPLN. INFO.:			JP 1975-60241	A	19750522
			JP 1975-60242	A	19750522
			JP 1975-62533	A	19750527
			US 1976-687220	A3	19760517

AB A vinylpyridine polymer is treated with a halogenated nucleic acid base to yield a polycationic polymer, which is complexed with an acidic polyanionic polymer in a solvent. The product is suitable for isolation of adenine, thymine, guanine, and cytosine. Thus, 2 g of a polymer obtained by heating poly(4-vinylpyridine) [25232-41-1] and 1-(2-hydroxy-3'-bromopropyl)thymine [62009-51-2] in DMF was dissolved in 400 ml water. The solution was added to 300 ml of a solution containing 1 g Na poly(styrenesulfonate) [9080-79-9]. The precipitate formed was collected, washed with water and Me2CO, and dried to obtain a polyelectrolyte complex.

L2 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:20859 CAPLUS
DOCUMENT NUMBER: 140:54473
TITLE: Methods for isolating nucleic acids using a polycationic polymer as precipitation agent
INVENTOR(S): Galaev, Igor Yurii; Gustavsson, Per-Erik; Izumrudov, Vladimir A.; Larsson, Per-Olof; Wahlund, Per-Olof
PATENT ASSIGNEE(S): Amersham Biosciences AB, Swed.
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004003200	A1	20040108	WO 2003-SE1127	20030626
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2488616	A1	20040108	CA 2003-2488616	20030626
AU 2003243108	A1	20040119	AU 2003-243108	20030626
EP 1517990	A1	20050330	EP 2003-761887	20030626
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2005531329	T	20051020	JP 2004-548907	20030626
US 2005222404	A1	20051006	US 2005-517227	20050518
PRIORITY APPLN. INFO.:			SE 2002-2074 A	20020628
			SE 2003-1034 A	20030408
			WO 2003-SE1127 W	20030626

AB The present invention relates to a methods for isolating nucleic acids using polycationic polymers as precipitating agent. The polycationic precipitating agent is preferably added in such an amount that the charge ratio [+] / [-] between polycationic precipitating agent and nucleic acid is ≥ 0.5, preferably ≥ 0.9 and most preferably ≥1 during the precipitation, and in the presence of a salt concentration ensuring the quant. specific precipitation of the nucleic acid/polycation complex. These agents include Poly(N,N'-dimethyldiallylammonium chloride), aliphatic ionene bromide and Poly(N-alkyl-4-vinylpyridinium halide).
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 2 OF 2 MEDLINE on STN
ACCESSION NUMBER: 2003182104 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12699684
TITLE: Compaction agent clarification of microbial lysates.
AUTHOR: DeWalt Brad W; Murphy Jason C; Fox George E; Willson Richard C
CORPORATE SOURCE: Department of Chemical Engineering, University of Houston, 4800 Calhoun Ave., Houston, TX 77204-4792, USA.
SOURCE: Protein expression and purification, (2003 Apr) Vol. 28, No. 2, pp. 220-3.

Journal code: 9101496. ISSN: 1046-5928.
(Investigators: Fox G E, U Houston, TX)
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
(RESEARCH SUPPORT, U.S. GOV'T, NON-P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals; Space Life Sciences
ENTRY MONTH: 200312
ENTRY DATE: Entered STN: 18 Apr 2003
Last Updated on STN: 17 Dec 2003
Entered Medline: 16 Dec 2003

AB Recombinant proteins are often purified from microbial lysates containing high concentrations of nucleic acids. Pre-purification steps such as nuclease addition or precipitation with polyethyleneimine or ammonium sulfate are normally required to reduce viscosity and to eliminate competing polyanions before anion exchange chromatography. We report that small polycationic compaction agents such as spermine selectively precipitate nucleic acids during or after Escherichia coli lysis, allowing DNA and RNA to be pelleted with the insoluble cell debris. Analysis by spectrophotometry and protein assay confirmed a significant reduction in the concentration of nucleic acids present, with preservation of protein. Lysate viscosity is greatly reduced, facilitating subsequent processing. We have used 5mM spermine to remove nucleic acids from E. coli lysate in the purification of a hexahistidine-tagged HIV reverse transcriptase.

L3 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:20859 CAPLUS
DOCUMENT NUMBER: 140:54473
TITLE: Methods for isolating nucleic acids using a polycationic polymer as precipitation agent
INVENTOR(S): Galaev, Igor Yurii; Gustavsson, Per-Erik; Izumrudov, Vladimir A.; Larsson, Per-Olof; Wahlund, Per-Olof
PATENT ASSIGNEE(S): Amersham Biosciences AB, Swed.
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004003200	A1	20040108	WO 2003-SE1127	20030626
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2488616	A1	20040108	CA 2003-2488616	20030626
AU 2003243108	A1	20040119	AU 2003-243108	20030626
EP 1517990	A1	20050330	EP 2003-761887	20030626
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2005531329	T	20051020	JP 2004-548907	20030626
US 2005222404	A1	20051006	US 2005-517227	20050518

PRIORITY APPLN. INFO.:

SE 2002-2074	A	20020628
SE 2003-1034	A	20030408
WO 2003-SE1127	W	20030626

AB The present invention relates to a methods for isolating nucleic acids using polycationic polymers as precipitating agent. The polycationic precipitating agent is preferably added in such an amount that the charge ratio [+] / [-] between polycationic precipitating agent and nucleic acid is ≥ 0.5, preferably ≥ 0.9 and most preferably ≥1 during the precipitation, and in the presence of a salt concentration ensuring the quant. specific precipitation of the nucleic acid/polycation complex. These agents include Poly(N,N'-dimethyldiallylammonium chloride), aliphatic ionene bromide and Poly(N-alkyl-4-vinylpyridinium halide).
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:658654 CAPLUS
DOCUMENT NUMBER: 140:177680
TITLE: Phase separations in water-salt solutions of polyelectrolyte complexes formed by RNA and polycations: Comparison with DNA complexes
AUTHOR(S): Wahlund, Per-Olof; Izumrudov, Vladimir A.; Gustavsson, Per-Erik; Larsson, Per-Olof; Galaev, Igor Yu.
CORPORATE SOURCE: Department of Biotechnology, Center for Chemistry and Chemical Engineering, Lund University, Lund, S-221 00, Swed.

SOURCE: Macromolecular Bioscience (2003), 3(8), 404-411
CODEN: MBAIBU; ISSN: 1616-5187
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Formation of insol. polyelectrolyte complexes (PECs) between RNA and polycations was followed by measuring the residual RNA absorbance in the solution after separation of the precipitate The polycations studied were poly(N,N'-dimethyldiallylammonium) chloride (pendant type) and 2,5-ionene bromide (integral type) with quaternary amino groups in every monomer unit. The data obtained were compared with the results of analogous studies of DNA-containing PECs. This study is a part of a project aimed at the specific separation of plasmid DNA from RNA, a major problem in the preparative isolation of plasmid DNA. We thus deliberately chose a heterogeneous RNA sample as it represents the RNA present in a real cell extract In contrast to the exhaustive precipitation of DNA observed at certain ϕ values, a significant part of RNA was nonpptd. at any ϕ = [+]/[-], i.e., at any ratio of pos. charged quaternary amino groups and neg. charged phosphate groups. The addition of sodium chloride increased the nonpptd. fraction of RNA. DNA, on the other hand, was completely precipitated by both polycations at $\phi > 0.7$. The less effective precipitation of RNA was probably due to the presence of a considerable fraction of short-chained mols., incapable of forming a sufficient cooperative system of salt bonds with the polycation. This assumption was supported by a sep. experiment, in which the precipitation behavior of RNA fractions of different mol. masses was investigated. The same tendency, while less pronounced, was also ascertained for PECs formed by polycations with DNA fractions of different mol. masses. The possibility of using the revealed differences between DNA and RNA behavior for effective precipitation procedure useful in biosepn. is discussed. The difference in the precipitation behavior of nucleic acids of different mol. masses means there is a possibility for developing an enzymic assay for DNAase and RNAase activity.
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 1 OF 1 MEDLINE on STN

ACCESSION NUMBER: 2004442984 MEDLINE

DOCUMENT NUMBER: PubMed ID: 15352066

TITLE: Precipitation by polycation as capture step in purification of plasmid DNA from a clarified lysate.

AUTHOR: Wahlund P-O; Gustavsson P-E; Izumrudov V A; Larsson P-O; Galaev I Yu

CORPORATE SOURCE: Department of Biotechnology, Center for Chemistry and Chemical Engineering, Lund University, P.O. Box 124, S-221 00, Lund, Sweden.

SOURCE: Biotechnology and bioengineering, (2004 Sep 5) Vol. 87, No. 5, pp. 675-84.
Journal code: 7502021. ISSN: 0006-3592.

PUB. COUNTRY: United States

DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)

LANGUAGE: English

FILE SEGMENT: Priority Journals

ENTRY MONTH: 200502

ENTRY DATE: Entered STN: 8 Sep 2004
Last Updated on STN: 11 Feb 2005
Entered Medline: 10 Feb 2005

AB The demand for highly purified plasmids in gene therapy and plasmid-based vaccines requires large-scale production of pharmaceutical-grade plasmid. Large-scale purification of plasmid DNA from bacterial cell culture normally includes one or several chromatographic steps. Prechromatographic steps include precipitation with solvents, salts, and polymers combined with enzymatic degradation of nucleic acids. No method alone has so far been able to selectively capture plasmid DNA directly from a clarified alkaline lysate. We present a method for selective precipitation of plasmid DNA from a clarified alkaline lysate using polycation poly(N, N'-dimethyldiallylammonium) chloride (PDMDAAC). The specific interaction between the polycation and the plasmid DNA resulted in the formation of a stoichiometric insoluble complex. Efficient removal of contaminants such as RNA, by far the major contaminant in a clarified lysate, and proteins as well as 20-fold plasmid concentration has been obtained with about 80% recovery. The method utilizes a inexpensive, commercially available polymer and thus provides a capture step suitable for large-scale production.

L6 ANSWER 1 OF 2 MEDLINE on STN
ACCESSION NUMBER: 2004346752 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15249040
TITLE: Antigen-binding properties of monoclonal antibodies reactive with human TATA-binding protein and use in immunoaffinity chromatography.
AUTHOR: Thompson Nancy E; Foley Katherine M; Burgess Richard R
CORPORATE SOURCE: McArdle Laboratory for Cancer Research, University of Wisconsin-Madison, Madison, WI 53706, USA.. thompson@oncology.wisc.edu
CONTRACT NUMBER: CA07175 (NCI)
CA23076 (NCI)
CA60896 (NCI)
GM28575 (NIGMS)
SOURCE: Protein expression and purification, (2004 Aug) Vol. 36, No. 2, pp. 186-97.
Journal code: 9101496. ISSN: 1046-5928.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200501
ENTRY DATE: Entered STN: 14 Jul 2004
Last Updated on STN: 2 Feb 2005
Entered Medline: 31 Jan 2005

AB The TATA-binding protein (TBP) plays a central role in the assembly of most eukaryotic transcription initiation complexes. We have characterized 3 monoclonal antibodies (mAbs) that react in the far amino-terminal (N-terminal) domain of the human TBP molecule (residues 1-99). One of these mAbs (designated 1TBP22) is a polyol-responsive monoclonal antibody (PR-mAb) and was adapted to an immunoaffinity chromatography procedure for purifying bacterially expressed, recombinant human TBP. The epitope for mAb 1TBP22 maps to residues 55-99, which includes the polyglutamine region. However, mAb 1TBP22 does not react with poly-l-glutamine. Human TBP, contained on the pET11a plasmid, was expressed in Escherichia coli Rosetta (DE3)pLysS. The cell lysate from 330 ml of induced culture was treated with polyethyleneimine (PEI) at 0.5 M NaCl to precipitate the nucleic acids. After centrifugation, the supernatant fluid was applied to an immunoadsorbent containing mAb 1TBP22. After extensive washing, the TBP was eluted with buffer containing 0.75 M ammonium sulfate and 40% propylene glycol. Human TPB purified by the immunoaffinity chromatography method was found to be active in gel-shift assays and transcription assays. Preliminary data indicate that this mAb might be useful for purifying protein complexes containing TBP from HeLa cell extracts.

L6 ANSWER 2 OF 2 MEDLINE on STN
ACCESSION NUMBER: 97216835 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9062987
TITLE: Role of polyethyleneimine in the purification of recombinant human tumour necrosis factor beta.
AUTHOR: Loh K C; Yao Z J; Yap M G; Chung M C
CORPORATE SOURCE: Bioprocessing Technology Centre, National University of Singapore, Singapore.
SOURCE: Journal of chromatography. A, (1997 Jan 31) Vol. 760, No. 2, pp. 165-71.
Journal code: 9318488. ISSN: 0021-9673.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English

FILE SEGMENT: Priority Journals
ENTRY MONTH: 199704
ENTRY DATE: Entered STN: 24 Apr 1997
Last Updated on STN: 24 Apr 1997
Entered Medline: 17 Apr 1997

AB The chromatographic behaviour of recombinant human tumour necrosis factor beta (rhTNF-beta) (pI approximately 9.0) during cation-exchange chromatography at pH 7.5 is investigated. Without prior treatment of the Escherichia coli cell extract with polyethyleneimine (PEI), very little rhTNF-beta was bound to the column. However, upon addition of 5% PEI (100 microliters ml-1) to the cell lysate, rhTNF-beta was shown to bind to cation-exchange columns normally. TNF-beta was readily precipitated from the clarified cell extract by 20% ammonium sulphate, but ony ca. 25% of this precipitate could be re-solubilized for further purification. However, when 5% PEI was included in the solubilization buffer, the balance of the rhTNF-beta could be recovered. It is proposed that charge interaction between rhTNF-beta and nucleic acids in the cell extract is responsible for both of these anomalous phenomena, and that PEI (a cationic polyelectrolyte) was able to disrupt this interaction by displacing rhTNF-beta from the charge complex.

L7 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1977:135250 CAPLUS
DOCUMENT NUMBER: 86:135250
TITLE: Isolation of the capsular polysaccharide from culture supernatant of haemophilus influenzae type b
AUTHOR(S): Anderson, Porter; Smith, David H.
CORPORATE SOURCE: Dep. Med., Child. Hosp. Med. Cent., Boston, MA, USA
SOURCE: Infection and Immunity (1977), 15(2), 472-7
CODEN: INFIBR; ISSN: 0019-9567
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The capsular polysaccharide (CP) of H. influenzae type b is precipitable from culture supernatant by the cationic detergent, hexadecyltrimethylammonium. Most of the nucleic acid and some of the protein, but almost none of the endotoxin, in the supernatant are copptd. Extraction of the precipitate with progressively stronger NaCl solns. seps. nucleic acid and protein from the CP and also effects a mol. size fractionation. Residual endotoxin and protein can be reduced by extraction with cold PhOH and ultracentrifugation. The resulting preparation has ribose, ribitol, and phosphate as principal components and contains <1% other sugars, proteins, or nucleic acid; it elutes on Sepharose 2B as a sym. peak with Kav 0.51.

L7 ANSWER 2 OF 6 MEDLINE on STN
ACCESSION NUMBER: 97284025 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9138101
TITLE: Isolating RNA from clinical samples with Catrimox-14 and lithium chloride.
AUTHOR: Macfarlane D E; Dahle C E
CORPORATE SOURCE: Department of Medicine, University of Iowa College of Medicine, Iowa City, USA.
SOURCE: Journal of clinical laboratory analysis, (1997) Vol. 11, No. 3, pp. 132-9.
Journal code: 8801384. ISSN: 0887-8013.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199706
ENTRY DATE: Entered STN: 9 Jul 1997
Last Updated on STN: 9 Jul 1997
Entered Medline: 23 Jun 1997

AB RNA is a highly informative molecule that has great potential as a target for diagnostic studies. This potential can be reached only when reliable methods for isolating RNA are available in the clinical environment. Cationic surfactants lyse cells and precipitate nucleic acids. We have described a novel cationic surfactant (tetradecyltrimethylammonium oxalate, Catrimox-14), which is particularly effective in precipitating RNA from cells and which can be applied to clinical specimens. We examine the utility of a method of recovering RNA from the surfactant-nucleic acid precipitate, in which 2 M lithium chloride is used to extract the DNA and surfactant from the precipitate; RNA (being insoluble in lithium chloride solution) remains in the pellet. The yield of RNA from peripheral blood mononuclear cells by the Catrimox-LiCl method we describe was the same yield by a conventional method using guanidine thiocyanate, phenol, and chloroform (GPC). The quality of the RNA, judged by agarose gel electrophoresis, A260/280 ratio and its ability to serve as a target for reverse transcription and PCR, was the same. RNA was isolated and amplified from blood stored for at least 2 weeks in Catrimox solution at

room temperature. RNA was also easily isolated with the Catrimox-LiCl method in good yield from frozen sections of mouse liver, spleen, kidney and brain, and from core biopsies of liver and kidney. RNA isolated from needle aspirates of liver, spleen, kidney, pancreas, and brain was easily amplified by RT-PCR. The Catrimox-LiCl method is simple and does not call for the use of corrosive reagents. The Catrimox-LiCl method removes 98% of the DNA. We conclude that the Catrimox-LiCl method is suitable for use in clinical applications of RNA-based diagnosis.

L7 ANSWER 3 OF 6 MEDLINE on STN
ACCESSION NUMBER: 97216835 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9062987
TITLE: Role of polyethyleneimine in the purification of recombinant human tumour necrosis factor beta.
AUTHOR: Loh K C; Yao Z J; Yap M G; Chung M C
CORPORATE SOURCE: Bioprocessing Technology Centre, National University of Singapore, Singapore.
SOURCE: Journal of chromatography. A, (1997 Jan 31) Vol. 760, No. 2, pp. 165-71.
Journal code: 9318488. ISSN: 0021-9673.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199704
ENTRY DATE: Entered STN: 24 Apr 1997
Last Updated on STN: 24 Apr 1997
Entered Medline: 17 Apr 1997

AB The chromatographic behaviour of recombinant human tumour necrosis factor beta (rhTNF-beta) (pI approximately 9.0) during cation-exchange chromatography at pH 7.5 is investigated. Without prior treatment of the Escherichia coli cell extract with polyethyleneimine (PEI), very little rhTNF-beta was bound to the column. However, upon addition of 5% PEI (100 microliters ml-1) to the cell lysate, rhTNF-beta was shown to bind to cation-exchange columns normally. TNF-beta was readily precipitated from the clarified cell extract by 20% ammonium sulphate, but ony ca. 25% of this precipitate could be re-solubilized for further purification. However, when 5% PEI was included in the solubilization buffer, the balance of the rhTNF-beta could be recovered. It is proposed that charge interaction between rhTNF-beta and nucleic acids in the cell extract is responsible for both of these anomalous phenomena, and that PEI (a cationic polyelectrolyte) was able to disrupt this interaction by displacing rhTNF-beta from the charge complex.

L7 ANSWER 4 OF 6 MEDLINE on STN
ACCESSION NUMBER: 92082247 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1660697
TITLE: Concentration and detection of hepatitis A virus and rotavirus from shellfish by hybridization tests.
AUTHOR: Zhou Y J; Estes M K; Jiang X; Metcalf T G
CORPORATE SOURCE: Division of Molecular Virology, Baylor College of Medicine, Houston, Texas 77030.
CONTRACT NUMBER: RFR 223-88-2182
SOURCE: Applied and environmental microbiology, (1991 Oct) Vol. 57, No. 10, pp. 2963-8.
Journal code: 7605801. ISSN: 0099-2240.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199201

ENTRY DATE: Entered STN: 2 Feb 1992
Last Updated on STN: 2 Feb 1992
Entered Medline: 13 Jan 1992

AB A modified polyethylene glycol precipitation method for concentration of virus followed by a new method to recover nucleic acid was used to detect hepatitis A virus (HAV) and rotavirus (SA11) in shellfish (oysters and hard-shell clams) by hybridization tests. Infectious virus, seeded into relatively large quantities of shellfish, was recovered consistently, with greater than 90% efficiency as measured by either in situ hybridization (HAV) or plaque assay (rotavirus SA11). Viral nucleic acid for dot blot hybridization assays was extracted and purified from virus-containing polyethylene glycol concentrates. Separation of shellfish polysaccharides from nucleic acid was necessary before viral RNA could be detected by dot blot hybridization. Removal of shellfish polysaccharides was accomplished by using the cationic detergent cetyltrimethylammonium bromide (CTAB). Use of CTAB reduced background interference with hybridization signals, which resulted in increased hybridization test sensitivity. After polysaccharide removal, dot blot hybridization assays could detect approximately 10(6) physical particles (corresponding to approximately 10(3) infectious particles) of HAV and 10(4) PFU of SA11 rotavirus present in 20-g samples of oyster and clam meats. These studies show continuing promise for the development of uniform methods to directly detect human viral pathogens in different types of shellfish. However, practical applications of such methods to detect noncultivatable human viral pathogens of public health interest will require additional improvements in test sensitivity.

L7 ANSWER 5 OF 6 MEDLINE on STN
ACCESSION NUMBER: 89116505 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2464290
TITLE: Measurement of microgram quantities of protein by a generally applicable turbidimetric procedure.
AUTHOR: Vera J C
CORPORATE SOURCE: Instituto de Bioquimica, Universidad Austral de Chile, Valdivia.
SOURCE: Analytical biochemistry, (1988 Oct) Vol. 174, No. 1, pp. 187-96.
Journal code: 0370535. ISSN: 0003-2697.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198903
ENTRY DATE: Entered STN: 8 Mar 1990
Last Updated on STN: 29 Jan 1996
Entered Medline: 8 Mar 1989

AB A modified turbidimetric method for protein determination which involves the use of trichloroacetic acid as the precipitating agent is described. Maximal turbidity develops in less than 30 min and is stable for at least 120 min. A linear relationship between turbidity at 340 nm and protein concentration is observed between 2 and 40 micrograms protein. Sodium dodecyl sulfate is added to avoid the interference by nonionic and cationic detergents and lipids and to decrease the protein-to-protein variation. The use of cetyltrimethyl ammonium bromide provides a two-step procedure to correct for the contribution of contaminating nucleic acid. Many compounds which interfere with other protein quantitation methods have no effect on this system. The interference of commonly used reagents as sucrose and urea can be easily corrected. This procedure compared favorably with the most widely used protein quantitation methods in simplicity, sensitivity, and specificity.

L7 ANSWER 6 OF 6 MEDLINE on STN
ACCESSION NUMBER: 77140061 MEDLINE
DOCUMENT NUMBER: PubMed ID: 300361
TITLE: Isolation of the capsular polysaccharide from culture supernatant of Haemophilus influenzae type b.
AUTHOR: Anderson P; Smith D H
SOURCE: Infection and immunity, (1977 Feb) Vol. 15, No. 2, pp. 472-7.
Journal code: 0246127. ISSN: 0019-9567.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197705
ENTRY DATE: Entered STN: 13 Mar 1990
Last Updated on STN: 13 Mar 1990
Entered Medline: 25 May 1977

AB The capsular polysaccharide (CP) of Haemophilus influenzae type b is known to be spontaneously released from the cells in culture. The CP is precipitable from culture supernatant by the cationic detergent hexadecyltrimethylammonium. Most of the nucleic acid and some of the protein, but almost none of the endotoxin, in the supernatant are co-precipitated. Extraction of the precipitate with progressively stronger NaCl solutions separates nucleic acid and protein from the CP and also effects a molecular size fractionation. Residual endotoxin and protein can be reduced by extraction with cold phenol and ultracentrifugation. The resulting preparation has ribose, ribitol, and phosphate as principal components and contains less than 1% other sugars, protein, or nucleic acid; it elutes on Sepharose 2B as a symmetrical peak with Kav 0.51.

L9 ANSWER 1 OF 5 MEDLINE on STN
ACCESSION NUMBER: 2004442984 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15352066
TITLE: Precipitation by polycation as capture step in purification of plasmid DNA from a clarified lysate.
AUTHOR: Wahlund P-O; Gustavsson P-E; Izumrudov V A; Larsson P-O; Galaev I Yu
CORPORATE SOURCE: Department of Biotechnology, Center for Chemistry and Chemical Engineering, Lund University, P.O. Box 124, S-221 00, Lund, Sweden.
SOURCE: Biotechnology and bioengineering, (2004 Sep 5) Vol. 87, No. 5, pp. 675-84.
Journal code: 7502021. ISSN: 0006-3592.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200502
ENTRY DATE: Entered STN: 8 Sep 2004
Last Updated on STN: 11 Feb 2005
Entered Medline: 10 Feb 2005

AB The demand for highly purified plasmids in gene therapy and plasmid-based vaccines requires large-scale production of pharmaceutical-grade plasmid. Large-scale purification of plasmid DNA from bacterial cell culture normally includes one or several chromatographic steps. Prechromatographic steps include precipitation with solvents, salts, and polymers combined with enzymatic degradation of nucleic acids. No method alone has so far been able to selectively capture plasmid DNA directly from a clarified alkaline lysate. We present a method for selective precipitation of plasmid DNA from a clarified alkaline lysate using polycation poly (N, N'-dimethyldiallylammonium) chloride (PDMDAAC). The specific interaction between the polycation and the plasmid DNA resulted in the formation of a stoichiometric insoluble complex. Efficient removal of contaminants such as RNA, by far the major contaminant in a clarified lysate, and proteins as well as 20-fold plasmid concentration has been obtained with about 80% recovery. The method utilizes a inexpensive, commercially available polymer and thus provides a capture step suitable for large-scale production.

L9 ANSWER 2 OF 5 MEDLINE on STN
ACCESSION NUMBER: 97284025 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9138101
TITLE: Isolating RNA from clinical samples with Catrimox-14 and lithium chloride.
AUTHOR: Macfarlane D E; Dahle C E
CORPORATE SOURCE: Department of Medicine, University of Iowa College of Medicine, Iowa City, USA.
SOURCE: Journal of clinical laboratory analysis, (1997) Vol. 11, No. 3, pp. 132-9.
Journal code: 8801384. ISSN: 0887-8013.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199706
ENTRY DATE: Entered STN: 9 Jul 1997
Last Updated on STN: 9 Jul 1997
Entered Medline: 23 Jun 1997

AB RNA is a highly informative molecule that has great potential as a target for diagnostic studies. This potential can be reached only when reliable methods for isolating RNA are available in the clinical environment.

Cationic surfactants lyse cells and precipitate nucleic acids. We have described a novel cationic surfactant (tetradecyltrimethylammonium oxalate, Catrimox-14), which is particularly effective in precipitating RNA from cells and which can be applied to clinical specimens. We examine the utility of a method of recovering RNA from the surfactant-nucleic acid precipitate, in which 2 M lithium chloride is used to extract the DNA and surfactant from the precipitate; RNA (being insoluble in lithium chloride solution) remains in the pellet. The yield of RNA from peripheral blood mononuclear cells by the Catrimox-LiCl method we describe was the same yield by a conventional method using guanidine thiocyanate, phenol, and chloroform (GPC). The quality of the RNA, judged by agarose gel electrophoresis, A260/280 ratio and its ability to serve as a target for reverse transcription and PCR, was the same. RNA was isolated and amplified from blood stored for at least 2 weeks in Catrimox solution at room temperature. RNA was also easily isolated with the Catrimox-LiCl method in good yield from frozen sections of mouse liver, spleen, kidney and brain, and from core biopsies of liver and kidney. RNA isolated from needle aspirates of liver, spleen, kidney, pancreas, and brain was easily amplified by RT-PCR. The Catrimox-LiCl method is simple and does not call for the use of corrosive reagents. The Catrimox-LiCl method removes 98% of the DNA. We conclude that the Catrimox-LiCl method is suitable for use in clinical applications of RNA-based diagnosis.

L9 ANSWER 3 OF 5 MEDLINE on STN
ACCESSION NUMBER: 73021089 MEDLINE
DOCUMENT NUMBER: PubMed ID: 4116694
TITLE: Precipitation of nucleic acids with cetyltrimethylammonium bromide: a method for preparing viral and cellular DNA polymerase products for cesium sulfate density gradient analysis.
AUTHOR: Reitz M S Jr; Abrell J W; Trainor C D; Gallo R C
SOURCE: Biochemical and biophysical research communications, (1972 Oct 6) Vol. 49, No. 1, pp. 30-8.
Journal code: 0372516. ISSN: 0006-291X.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197212
ENTRY DATE: Entered STN: 10 Mar 1990
Last Updated on STN: 3 Feb 1997
Entered Medline: 17 Dec 1972

L9 ANSWER 4 OF 5 MEDLINE on STN
ACCESSION NUMBER: 70214089 MEDLINE
DOCUMENT NUMBER: PubMed ID: 5423367
TITLE: Isolation and analysis of the nucleic acids and polysaccharides from Clostridium welchii.
AUTHOR: Darby G K; Jones A S; Kennedy J F; Walker R T
SOURCE: Journal of bacteriology, (1970 Jul) Vol. 103, No. 1, pp. 159-65.
Journal code: 2985120R. ISSN: 0021-9193.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197008
ENTRY DATE: Entered STN: 1 Jan 1990
Last Updated on STN: 1 Jan 1990
Entered Medline: 10 Aug 1970

AB A method previously described for the use of bentonite in the isolation of the nucleic acids from two gram-positive organisms was applied to the isolation of the nucleic acids from two

strains of Clostridium welchii. The nucleic acids were separated from polysaccharides by the fractional precipitation of their cetyltrimethyl-ammonium salts from sodium chloride solution, and the base composition of the nucleic acids was determined. One strain of C. welchii investigated (NCTC 10578) was shown to produce considerable quantities of an acidic and also a weakly acidic or neutral polysaccharide; the other strain (ATCC 10543) gave very small quantities of the latter but none of the former polysaccharide. The monosaccharide composition of these polysaccharides was determined and the acidic polysaccharide was shown to resemble dermatan sulfate.

L9 ANSWER 5 OF 5 MEDLINE on STN
ACCESSION NUMBER: 65130547 MEDLINE
DOCUMENT NUMBER: PubMed ID: 14325869
TITLE: PHYSICOCHEMICAL AND BIOLOGICAL STUDIES ON VARIOUS PREPARATIONS OF TUBERCULIN PURIFIED PROTEIN DERIVATIVE.
AUTHOR: LANDI S; HELD H R
SOURCE: Applied microbiology, (1965 Mar) Vol. 13, pp. 132-9. Journal code: 7605802. ISSN: 0003-6919.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: OLDMEDLINE; NONMEDLINE
ENTRY MONTH: 199612
ENTRY DATE: Entered STN: 16 Jul 1999
Last Updated on STN: 16 Jul 1999
Entered Medline: 1 Dec 1996

AB Tuberculin purified protein derivative (PPD) has been prepared by seven different precipitation methods from culture filtrate of Mycobacterium tuberculosis var. hominis. It was found to contain 48 to 99% tuberculoprotein, depending on the method of precipitation. The remaining percentage is represented by nucleic acid, polysaccharide, and ash. Activation analysis on tuberculin PPD and on tubercle bacilli has revealed the presence of trace elements. The molecular weight of tuberculin PPD has been found to be of the order of 14,800 to 27,800. The biological activity of tuberculin PPD varies from lot to lot and from method to method. A correlation between its molecular weight and its biological activity seems to exist.

L14 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1977:172177 CAPLUS
DOCUMENT NUMBER: 86:172177
TITLE: Polyanionic polymer complex containing nucleic acid base
INVENTOR(S): Seita, Toru; Shimizu, Akihiko; Kosaka, Yujiro
PATENT ASSIGNEE(S): Toyo Soda Mfg. Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
JP 51138790	A	19761130	JP 1975-62533		19750527
US 4119590	A	19781010	US 1977-809011		19770622
PRIORITY APPLN. INFO.:			JP 1975-60241	A	19750522
			JP 1975-60242	A	19750522
			JP 1975-62533	A	19750527
			US 1976-687220	A3	19760517

AB A vinylpyridine polymer is treated with a halogenated nucleic acid base to yield a polycationic polymer, which is complexed with an acidic polyanionic polymer in a solvent. The product is suitable for isolation of adenine, thymine, guanine, and cytosine. Thus, 2 g of a polymer obtained by heating poly(4-vinylpyridine) [25232-41-1] and 1-(2-hydroxy-3'-bromopropyl)thymine [62009-51-2] in DMF was dissolved in 400 ml water. The solution was added to 300 ml of a solution containing 1 g Na poly(styrenesulfonate) [9080-79-9]. The precipitate formed was collected, washed with water and Me2CO, and dried to obtain a polyelectrolyte complex.

L18 ANSWER 1 OF 1 MEDLINE on STN
ACCESSION NUMBER: 2004442984 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15352066
TITLE: Precipitation by polycation as capture step in purification of plasmid DNA from a clarified lysate.
AUTHOR: Wahlund P-O; Gustavsson P-E; Izumrudov V A; Larsson P-O; Galaev I Yu
CORPORATE SOURCE: Department of Biotechnology, Center for Chemistry and Chemical Engineering, Lund University, P.O. Box 124, S-221 00, Lund, Sweden.
SOURCE: Biotechnology and bioengineering, (2004 Sep 5) Vol. 87, No. 5, pp. 675-84.
Journal code: 7502021. ISSN: 0006-3592.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200502
ENTRY DATE: Entered STN: 8 Sep 2004
Last Updated on STN: 11 Feb 2005
Entered Medline: 10 Feb 2005

AB The demand for highly purified plasmids in gene therapy and plasmid-based vaccines requires large-scale production of pharmaceutical-grade plasmid. Large-scale purification of plasmid DNA from bacterial cell culture normally includes one or several chromatographic steps. Prechromatographic steps include precipitation with solvents, salts, and polymers combined with enzymatic degradation of nucleic acids. No method alone has so far been able to selectively capture plasmid DNA directly from a clarified alkaline lysate. We present a method for selective precipitation of plasmid DNA from a clarified alkaline lysate using polycation poly(N, N'-dimethyldiallylammonium) chloride (PDMDAAC). The specific interaction between the polycation and the plasmid DNA resulted in the formation of a stoichiometric insoluble complex. Efficient removal of contaminants such as RNA, by far the major contaminant in a clarified lysate, and proteins as well as 20-fold plasmid concentration has been obtained with about 80% recovery. The method utilizes a inexpensive, commercially available polymer and thus provides a capture step suitable for large-scale production.

L19 ANSWER 1 OF 5 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:20859 CAPLUS
DOCUMENT NUMBER: 140:54473
TITLE: Methods for isolating nucleic acids using a polycationic polymer as precipitation agent
INVENTOR(S): Galaev, Igor Yurii; Gustavsson, Per-Erik; Izumrudov, Vladimir A.; Larsson, Per-Olof; Wahlund, Per-Olof
PATENT ASSIGNEE(S): Amersham Biosciences AB, Swed.
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004003200	A1	20040108	WO 2003-SE1127	20030626
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2488616	A1	20040108	CA 2003-2488616	20030626
AU 2003243108	A1	20040119	AU 2003-243108	20030626
EP 1517990	A1	20050330	EP 2003-761887	20030626
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2005531329	T	20051020	JP 2004-548907	20030626
US 2005222404	A1	20051006	US 2005-517227	20050518

PRIORITY APPLN. INFO.:

SE 2002-2074	A	20020628
SE 2003-1034	A	20030408
WO 2003-SE1127	W	20030626

AB The present invention relates to a methods for isolating nucleic acids using polycationic polymers as precipitating agent. The polycationic precipitating agent is preferably added in such an amount that the charge ratio [+] / [-] between polycationic precipitating agent and nucleic acid is ≥ 0.5, preferably ≥ 0.9 and most preferably ≥1 during the precipitation, and in the presence of a salt concentration ensuring the quant. specific precipitation of the nucleic acid/polycation complex. These agents include Poly(N,N'-dimethyldiallylammonium chloride), aliphatic ionene bromide and Poly(N-alkyl-4-vinylpyridinium halide).
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 2 OF 5 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:658654 CAPLUS
DOCUMENT NUMBER: 140:177680
TITLE: Phase separations in water-salt solutions of polyelectrolyte complexes formed by RNA and polycations: Comparison with DNA complexes
AUTHOR(S): Wahlund, Per-Olof; Izumrudov, Vladimir A.; Gustavsson, Per-Erik; Larsson, Per-Olof; Galaev, Igor Yu.
CORPORATE SOURCE: Department of Biotechnology, Center for Chemistry and Chemical Engineering, Lund University, Lund, S-221 00, Swed.

SOURCE: Macromolecular Bioscience (2003), 3(8), 404-411
CODEN: MBAIBU; ISSN: 1616-5187
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Formation of insol. polyelectrolyte complexes (PECs) between RNA and polycations was followed by measuring the residual RNA absorbance in the solution after separation of the precipitate The polycations studied were poly(N,N'-dimethyldiallylammonium) chloride (pendant type) and 2,5-ionene bromide (integral type) with quaternary amino groups in every monomer unit. The data obtained were compared with the results of analogous studies of DNA-containing PECs. This study is a part of a project aimed at the specific separation of plasmid DNA from RNA, a major problem in the preparative isolation of plasmid DNA. We thus deliberately chose a heterogeneous RNA sample as it represents the RNA present in a real cell extract In contrast to the exhaustive precipitation of DNA observed at certain ϕ values, a significant part of RNA was nonpptd. at any ϕ = [+]/[-], i.e., at any ratio of pos. charged quaternary amino groups and neg. charged phosphate groups. The addition of sodium chloride increased the nonpptd. fraction of RNA. DNA, on the other hand, was completely precipitated by both polycations at $\phi > 0.7$. The less effective precipitation of RNA was probably due to the presence of a considerable fraction of short-chained mols., incapable of forming a sufficient cooperative system of salt bonds with the polycation. This assumption was supported by a sep. experiment, in which the precipitation behavior of RNA fractions of different mol. masses was investigated. The same tendency, while less pronounced, was also ascertained for PECs formed by polycations with DNA fractions of different mol. masses. The possibility of using the revealed differences between DNA and RNA behavior for effective precipitation procedure useful in biosepn. is discussed. The difference in the precipitation behavior of nucleic acids of different mol. masses means there is a possibility for developing an enzymic assay for DNAase and RNAase activity.

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 3 OF 5 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:546388 CAPLUS
DOCUMENT NUMBER: 138:78390
TITLE: Oligonucleotide-mediated site-directed gene repair
AUTHOR(S): Kren, Betsy T.; Bandyopadhyay, Paramita; Roy Chowdhury, Namita; Roy Chowdhury, Jayanta; Steer, Clifford J.
CORPORATE SOURCE: Dep. Med., Univ. Minnesota Medical School, Minneapolis, MN, 55455, USA
SOURCE: Methods in Enzymology (2002), 346(Gene Therapy Methods), 14-35
CODEN: MENZAU; ISSN: 0076-6879
PUBLISHER: Academic Press
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The procedures for designing oligonucleotide (ON) to correct point mutations in genomic DNA by repairing the endogenous faulty copy of the gene are described. The chimeric RNA/DNA ONs introduced a missense mutation in genomic DNA in cultured human hepatoma cells and nonreplicating isolated rat hepatocytes were demonstrated. The high rates of nucleotide conversion in the primary hepatocytes resulted, in part, from a highly efficient delivery of the ONs to the cells using a nonviral, a sialoglycoprotein receptor-targeted delivery system. Lipids used in delivery system were dioleoylphosphatidylcholine (DOPC), a neutral lipid; dioleoylphosphatidylserine (DOPS), an anionic phospholipid; and the

targeting lipid, galactocerebroside (Gc), in a precise molar ratio. Polyethyleneimine (PEI) was also chosen as a carrier for the ONs because this polycation is an effective nucleic acid delivery agent in cells both in vitro and in vivo. (c) 2002 Academic Press.

REFERENCE COUNT: 48 THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1980:122542 CAPLUS
DOCUMENT NUMBER: 92:122542
TITLE: Protamine and polyarginine bacteriolysis. Similarities in its mechanism with chromatin DNA picnosis
AUTHOR(S): Antohi, Stefan; Popescu, Alexandru
CORPORATE SOURCE: Dep. Radiobiol., Bucharest, 7000/1, Rom.
SOURCE: Zeitschrift fuer Naturforschung, C: Journal of Biosciences (1979), 34C(12), 1144-50
CODEN: ZNCBDA; ISSN: 0341-0382
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Protamine and poly-L-arginine sulfate [26700-68-5] had bacteriolytic effects indicating their primary sites of action as being wall components and showing bacterial diversity genetically determined Shake-incubation was required in producing cell-lysis. Studies on Bacillus subtilis revealed a high polycation multiplicity per cell in lytic event displaying multihit lysing kinetics; bacteriolysis was inhibited by trypsin, pronase, purified polyanionic wall polysaccharide, and by dissociative actions of salt hypermolarities used in isolation of nucleic acids. The inactivation of polycation lytic abilities during bacteriolysis was accompanied by modifications in electrophoretic running of protamine and polyarginine. For polycation bacteriolysis a model of multisite polycation wall component condensation analogous to chromatin DNA pyconosis exerted by histone octamers is discussed.

L19 ANSWER 5 OF 5 MEDLINE on STN
ACCESSION NUMBER: 80193942 MEDLINE
DOCUMENT NUMBER: PubMed ID: 161838
TITLE: Protamine and polyarginine bacteriolysis. Similarities in its mechanism with chromatin DNA picnosis.
AUTHOR: Antohi S; Popescu A
SOURCE: Zeitschrift fur Naturforschung. Section C: Biosciences, (1979 Dec) Vol. 34, No. 12, pp. 1144-50.
Journal code: 7801143. ISSN: 0341-0382.
PUB. COUNTRY: GERMANY, WEST: Germany, Federal Republic of
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198007
ENTRY DATE: Entered STN: 15 Mar 1990
Last Updated on STN: 15 Mar 1990
Entered Medline: 22 Jul 1980

AB Protamine and polyarginine had bacteriolytic effects indicating their primary sites of action as being wall components and showing bacterial diversity genetically determined. Shake-incubation was required in producing cell-lysis. Studies on Bacillus subtilis revealed a high polycation multiplicity per cell in lytic event displaying multihit lysing kinetics; bacteriolysis was inhibited by trypsin, pronase, purified polyanionic wall polysaccharide, and by dissociative actions of salt hypermolarities used in isolation of nucleic acids. The inactivation of polycation lytic abilities during bacteriolysis was accompanied by modifications in electrophoretic

running of protamine and polyarginine. It is suggested as mechanism of cell-lysis, the multiple zonal surface condensations of polyanionic wall components by basic polypeptides, likely similar with chromatin DNA picnosis. This analogy is discussed.

L21 ANSWER 1 OF 5 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1997:257484 CAPLUS
DOCUMENT NUMBER: 126:235610
TITLE: Method and apparatus for isolating nucleic acid by binding to solid, hydrophilic organic matrixes
INVENTOR(S): Su, Xing
PATENT ASSIGNEE(S): Theobald Smith Research Institute, Inc., USA; Su, Xing
SOURCE: PCT Int. Appl., 56 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9708547	A1	19970306	WO 1996-US13626	19960826
W: AU, CA, CN, JP, US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5804684	A	19980908	US 1995-519039	19950824
AU 9668575	A	19970319	AU 1996-68575	19960826
PRIORITY APPLN. INFO.:			US 1995-519039	A2 19950824
			WO 1996-US13626	W 19960826

AB The invention features a method of isolating nucleic acid in a substantially purified form, including the steps of: (a) contacting a biol. sample which contains nucleic acid with a matrix comprising a solid hydrophilic organic polymer without an effective pos. charge under conditions which permit the nucleic acid to bind to the matrix; and (b) recovering nucleic acid from the matrix. The method utilizes the properties of aggregated nucleic acids to isolate and purify nucleic acids from contaminants such as other cellular components, and is based on the discovery that aggregated nucleic is capable of binding reversibly to a solid, hydrophilic organic matrix without an effective pos. charge. High yield recovery of relatively pure nucleic acid mols. may be efficiently achieved from a number of samples simultaneously, thus saving time and effort and providing for subsequent simultaneous processing or anal. of numerous nucleic acid samples. In a typical application of the method, dried blood spots are removed from filter paper and immersed in extn buffer or the same buffer plus chelating resin, and then incubated with proteinase K to digest proteins. The samples are mixed with co-precipitants glycogen, Mg2+, and isopropanol and incubated at room temperature for 20 min to precipitate nucleic acids, which are then loaded onto pre-equilibrated matrix consisting of filter paper collagen connected to a vacuum manifold unit. The matrix is washed twice and dried, elution buffer is added to dissolve nucleic acids at room temperature, nucleic acids are recovered by centrifugation, and the samples purified by columns are separated in 1% agarose gel. The same amt of nucleic of nucleic acid (mainly DNA) is recovered by the matrix method as by a control method, based on gel electrophoresis anal.,and samples treated with chelating resins contained DNAs of relatively large mol. wts. An apparatus for the procedure is described which includes multiple housings and a planar surface support for convenient simultaneous handling of the multiple housings.

L21 ANSWER 2 OF 5 MEDLINE on STN
ACCESSION NUMBER: 2005219236 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15657724
TITLE: Applications of zeolite inorganic composites in biotechnology: current state and perspectives.
AUTHOR: Sakaguchi Kengo; Matsui Masayoshi; Mizukami Fujio

CORPORATE SOURCE: Department of Applied Biological Science, Faculty of Science and Technology, Tokyo University of Science, Noda-shi, Chiba-ken 278-8510, Japan..
kengo@rs.noda.tus.ac.jp
SOURCE: Applied microbiology and biotechnology, (2005 May) Vol. 67, No. 3, pp. 306-11. Electronic Publication: 2005-01-19.
Ref: 35
Journal code: 8406612. ISSN: 0175-7598.
PUB. COUNTRY: Germany: Germany, Federal Republic of
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200602
ENTRY DATE: Entered STN: 29 Apr 2005
Last Updated on STN: 15 Feb 2006
Entered Medline: 14 Feb 2006

AB The purpose of this short review is to introduce applications of inorganic composites, zeolites, in biotechnology. Although inorganic chemistry is generally considered distant from biotechnology, the two could be harmoniously integrated for biopolymer chromatography. New chromatographic carriers have been developed based on principles differing from those underlying conventional chromatography. Some can be used for the purification of proteins according to novel physicochemical principles, according to their isoelectric point (pI), molecular weight and shape. The amount of protein adsorbed is related to the pore size of the composites, which can recognize biomolecules with reference to these three parameters. Proteins adsorbed at their pI have been found to be desorbed at the pI by polyethylene glycol, but not by high ionic medium (NaCl), SDS, non-ionic detergents, ATP or urea. Therefore, inorganic composites synthesized in consideration of pore size and three-dimensional structure are suitable as new chromatographic carriers. Selective fractionation of biomaterials including proteins and nucleic acids should provide useful information regarding whether conjugated proteins in a precipitated state can be separated on net charge and whether cells can be directly fractionated in future.

L21 ANSWER 3 OF 5 MEDLINE on STN
ACCESSION NUMBER: 2003426573 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12967270
TITLE: Cations as mediators of the adsorption of nucleic acids on clay surfaces in prebiotic environments.
AUTHOR: Franchi Marco; Ferris James P; Gallori Enzo
CORPORATE SOURCE: Department of Animal Biology and Genetics, University of Florence, Italy.
SOURCE: Origins of life and evolution of the biosphere : the journal of the International Society for the Study of the Origin of Life, (2003 Feb) Vol. 33, No. 1, pp. 1-16.
Journal code: 8610391. ISSN: 0169-6149.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, U.S. GOV'T, NON-P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals; Space Life Sciences
ENTRY MONTH: 200404
ENTRY DATE: Entered STN: 12 Sep 2003
Last Updated on STN: 8 Apr 2004
Entered Medline: 7 Apr 2004

AB Monovalent ([Na+] > 10 mM) and divalent ([Ca2+], [Mg2+] > 1.0 mM) cations induced the precipitation of nucleic acid molecules. In the presence of clay minerals (montmorillonite and kaolinite), there was adsorption instead of precipitation. The cation concentration needed for adsorption depended on both the valence of

the cations and the chemical nature of the nucleic acid molecules. Double-stranded nucleic acids needed higher cation concentrations than single-stranded ones to be adsorbed to the same extent on clay. Divalent cations were more efficient than monovalent ones in mediating adsorption. Adsorption to the clay occurred only when both nucleic acids and cations were present. However, once the complexes were formed, the cations could not be removed from the system by washing, indicating that they are directly involved in the association between nucleic acids and mineral surfaces. These observations indicate that cations take part directly in the formation of nucleic acid-clay complexes, acting as a 'bridge' between the negative charges on the mineral surface and those of the phosphate groups of the genetic polymer . The relatively low cation concentrations needed for adsorption and the ubiquitous presence of clay minerals in the environment suggest that the adsorption of nucleic acids on mineral surfaces could have taken place in prebiotic habitats. This may have played an important role in the formation and preservation of nucleic acids and/or their precursor polymers.

L21 ANSWER 4 OF 5 MEDLINE on STN
ACCESSION NUMBER: 2003357054 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12889823
TITLE: Metal chelate affinity precipitation of RNA and purification of plasmid DNA.
AUTHOR: Balan Sindhu; Murphy Jason; Galaev Igor; Kumar Ashok; Fox George E; Mattiasson Bo; Willson Richard C
CORPORATE SOURCE: Department of Biology and Biochemistry, University of Houston, 4800 Calhoun, Houston, TX 77204-5001, USA.
SOURCE: Biotechnology letters, (2003 Jul) Vol. 25, No. 13, pp. 1111-6.
Journal code: 8008051. ISSN: 0141-5492.
(Investigators: Fox G E, U Houston, TX)
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: (EVALUATION STUDIES)
Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
(RESEARCH SUPPORT, U.S. GOV'T, NON-P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals; Space Life Sciences
ENTRY MONTH: 200309
ENTRY DATE: Entered STN: 1 Aug 2003
Last Updated on STN: 28 Sep 2003
Entered Medline: 26 Sep 2003

AB The affinity of metal chelates for amino acids, such as histidine, is widely used in purifying proteins, most notably through six-histidine 'tails'. We have found that metal affinity interactions can also be applied to separation of single-stranded nucleic acids through interactions involving exposed purines. Here we describe a metal affinity precipitation method to resolve RNA from linear and plasmid DNA. A copper-charged copolymer of N-isopropyl acrylamide (NIPAM) and vinyl imidazole (VI) is used to purify plasmid from an alkaline lysate of E. coli. The NIPAM units confer reversible solubility on the copolymer while the imidazole chelates metal ions in a manner accessible to interaction with soluble ligands. RNA was separated from the plasmid by precipitation along with the polymer in the presence of 800 mM NaCl. Bound RNA could be recovered by elution with imidazole and separated from copolymer by a second precipitation step. RNA binding showed a strong dependence on temperature and on the type of buffer used.

L21 ANSWER 5 OF 5 MEDLINE on STN
ACCESSION NUMBER: 97177815 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9025321

TITLE: Polyelectrolyte complexes as vehicles for affinity precipitation of proteins.

AUTHOR: Dissing U; Mattiasson B
CORPORATE SOURCE: Department of Biotechnology, Lund University, Sweden.

SOURCE: Journal of biotechnology, (1996 Nov 29) Vol. 52, No. 1, pp. 1-10.
Journal code: 8411927. ISSN: 0168-1656.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Biotechnology
ENTRY MONTH: 199703
ENTRY DATE: Entered STN: 21 Mar 1997
Last Updated on STN: 21 Mar 1997
Entered Medline: 13 Mar 1997

AB Polyelectrolyte complexes (PECs) were formed with polyethylene imine (PEI) and polyacrylic acid sodium salt (PA). The aqueous solubility of such PLCs is dependent on the stoichiometry between the polymers, the charge densities of the polymers and salts present in the solution. Cibacron blue 3GA (CB) was coupled to the PEI and the PECs were used for affinity precipitation of lactate dehydrogenase (LDH) in beef heart extracts. The affinity precipitation was induced by a shift in pH, while the desorption and separation of LDH from the PECs was performed by addition of KCl combined with a shift in pH. LDH was obtained with a yield of 85% and a purification factor of approx. 11-fold. The polymers were recovered and reused once and the results became similar. Prior to the affinity precipitation, interfering nucleic acids were removed by precipitation with PEI.

L22 ANSWER 1 OF 10 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1988:91290 CAPLUS
DOCUMENT NUMBER: 108:91290
TITLE: The use of polyethyleneimine in protein purification
AUTHOR(S): Jendrisak, Jerry
CORPORATE SOURCE: Promega Corp., Madison, WI, 53711, USA
SOURCE: UCLA Symposia on Molecular and Cellular Biology, New Series (1987), 68(Protein Purif.), 75-97
CODEN: USMBD6; ISSN: 0735-9543
DOCUMENT TYPE: Journal
LANGUAGE: English

AB PEI forms ionic complexes with macromols. containing acidic domains (nucleic acids and some proteins) resulting in their precipitation Precipitation behavior is affected by salt concentration, pH, and the concentration of precipitable components in the extract Some of these parameters affecting precipitation as well as methods for recovering protein from PEI ppts. are illustrated in expts. with crude exts. prepared from wheat germ. Optimized conditions for the use of PEI in the purification of several enzymes are also summarized to illustrate the variety of conditions required for optimal selectivity with PEI. Finally, a reference list of enzymes purified with a PEI step is presented as an aid in locating reports of specific interest.

L22 ANSWER 2 OF 10 MEDLINE on STN
ACCESSION NUMBER: 2006099512 MEDLINE
DOCUMENT NUMBER: PubMed ID: 16401354
TITLE: Sequence specific visual detection of LAMP reactions by addition of cationic polymers.
AUTHOR: Mori Yasuyoshi; Hirano Tsuyoshi; Notomi Tsugunori
CORPORATE SOURCE: Eiken Chemical Co., Ltd, 1381-3 Shimoishigami, Ohtawara, Tochigi, 324-0036, Japan.. Yasuyoshi_Mori@eiken.co.jp
SOURCE: BMC biotechnology, (2006) Vol. 6, pp. 3. Electronic Publication: 2006-01-10.
Journal code: 101088663. E-ISSN: 1472-6750.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: (EVALUATION STUDIES)
Journal; Article; (JOURNAL ARTICLE)
(VALIDATION STUDIES)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200603
ENTRY DATE: Entered STN: 22 Feb 2006
Last Updated on STN: 15 Mar 2006
Entered Medline: 14 Mar 2006

AB BACKGROUND: Development of a practical gene point-of-care testing device (g-POCT device) requires innovative detection methods for demonstrating the results of the gene amplification reaction without the use of expensive equipment. We have studied a new method for the sequence-specific visual detection of minute amounts of nucleic acids using precipitation reaction by addition of cationic polymers to amplicons of Loop mediated isothermal Amplification (LAMP). RESULTS: Oligo DNA probes labeled with different fluorescent dyes were prepared for multiple nucleic acid templates, and the templates were amplified by the LAMP reactions under the existence of the probes. At completion of the LAMP reaction, an optimal amount of low molecular weight polyethylenimine (PEI) was added, resulting in the precipitation of the insoluble LAMP amplicon-PEI complex. The fluorescently labeled Oligo DNA probes hybridized to the LAMP product were incorporated into the precipitation, and the precipitate emitted fluorescence corresponding to the amplified nucleic acid templates. The color of emitted fluorescence can be detected easily by naked eye on a conventional UV

illuminator. CONCLUSION: The presence or absence of minute amount of nucleic acid templates could be detected in a simple manner through visual assessment for the color of the LAMP amplicon-PEI complex precipitate. We conclude that this detection method may facilitate development of small and simple g-POCT device.

L22 ANSWER 3 OF 10 MEDLINE on STN
ACCESSION NUMBER: 2004346752 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15249040
TITLE: Antigen-binding properties of monoclonal antibodies reactive with human TATA-binding protein and use in immunoaffinity chromatography.
AUTHOR: Thompson Nancy E; Foley Katherine M; Burgess Richard R
CORPORATE SOURCE: McArdle Laboratory for Cancer Research, University of Wisconsin-Madison, Madison, WI 53706, USA.. thompson@oncology.wisc.edu
CONTRACT NUMBER: CA07175 (NCI)
CA23076 (NCI)
CA60896 (NCI)
GM28575 (NIGMS)
SOURCE: Protein expression and purification, (2004 Aug) Vol. 36, No. 2, pp. 186-97.
Journal code: 9101496. ISSN: 1046-5928.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200501
ENTRY DATE: Entered STN: 14 Jul 2004
Last Updated on STN: 2 Feb 2005
Entered Medline: 31 Jan 2005

AB The TATA-binding protein (TBP) plays a central role in the assembly of most eukaryotic transcription initiation complexes. We have characterized 3 monoclonal antibodies (mAbs) that react in the far amino-terminal (N-terminal) domain of the human TBP molecule (residues 1-99). One of these mAbs (designated 1TBP22) is a polyol-responsive monoclonal antibody (PR-mAb) and was adapted to an immunoaffinity chromatography procedure for purifying bacterially expressed, recombinant human TBP. The epitope for mAb 1TBP22 maps to residues 55-99, which includes the polyglutamine region. However, mAb 1TBP22 does not react with poly-l-glutamine. Human TBP, contained on the pET11a plasmid, was expressed in Escherichia coli Rosetta (DE3)pLysS. The cell lysate from 330 ml of induced culture was treated with polyethyleneimine (PEI) at 0.5 M NaCl to precipitate the nucleic acids. After centrifugation, the supernatant fluid was applied to an immunoadsorbent containing mAb 1TBP22. After extensive washing, the TBP was eluted with buffer containing 0.75 M ammonium sulfate and 40% propylene glycol. Human TPB purified by the immunoaffinity chromatography method was found to be active in gel-shift assays and transcription assays. Preliminary data indicate that this mAb might be useful for purifying protein complexes containing TBP from HeLa cell extracts.

L22 ANSWER 4 OF 10 MEDLINE on STN
ACCESSION NUMBER: 1999361144 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10432579
TITLE: Integrated removal of nucleic acids and recovery of LDH from homogenate of beef heart by affinity precipitation.
AUTHOR: Dissing U; Mattiasson B
CORPORATE SOURCE: Department of Biotechnology, Lund University, Sweden.
SOURCE: Bioseparation, (1998-1999) Vol. 7, No. 4-5, pp. 221-9.
Journal code: 9011423. ISSN: 0923-179X.

PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199908
ENTRY DATE: Entered STN: 27 Aug 1999
Last Updated on STN: 27 Aug 1999
Entered Medline: 18 Aug 1999

AB Lactate dehydrogenase (LDH) was purified from beef heart homogenate by affinity precipitation. The protein purification was integrated with nucleic acid removal and was done by precipitation of nucleic acids by addition of poly(ethylene imine) PEI onto which a ligand, Cibacron blue, had been coupled. The yield of LDH after elution from the precipitate was 63%, the purification factor 6.9 and the nucleic acid content was reduced by 98%. The capacity of the affinity polymer Cibacron blue-PEI is dependent on the nucleic acid concentration in the homogenate. The beef heart homogenate had an unfavourable ratio of nucleic acids to LDH. Precipitation with recirculated Cibacron blue-PEI, already complexed with some nucleic acids, improved the yield of the enzyme to 74%. The loss of Cibacron blue-PEI, when recirculated, was less than 1% after each cycle.

L22 ANSWER 5 OF 10 MEDLINE on STN
ACCESSION NUMBER: 97216835 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9062987
TITLE: Role of polyethyleneimine in the purification of recombinant human tumour necrosis factor beta.
AUTHOR: Loh K C; Yao Z J; Yap M G; Chung M C
CORPORATE SOURCE: Bioprocessing Technology Centre, National University of Singapore, Singapore.
SOURCE: Journal of chromatography. A, (1997 Jan 31) Vol. 760, No. 2, pp. 165-71.
Journal code: 9318488. ISSN: 0021-9673.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199704
ENTRY DATE: Entered STN: 24 Apr 1997
Last Updated on STN: 24 Apr 1997
Entered Medline: 17 Apr 1997

AB The chromatographic behaviour of recombinant human tumour necrosis factor beta (rhTNF-beta) (pI approximately 9.0) during cation-exchange chromatography at pH 7.5 is investigated. Without prior treatment of the Escherichia coli cell extract with polyethyleneimine (PEI), very little rhTNF-beta was bound to the column. However, upon addition of 5% PEI (100 microliters ml-1) to the cell lysate, rhTNF-beta was shown to bind to cation-exchange columns normally. TNF-beta was readily precipitated from the clarified cell extract by 20% ammonium sulphate, but ony ca. 25% of this precipitate could be re-solubilized for further purification. However, when 5% PEI was included in the solubilization buffer, the balance of the rhTNF-beta could be recovered. It is proposed that charge interaction between rhTNF-beta and nucleic acids in the cell extract is responsible for both of these anomalous phenomena, and that PEI (a cationic polyelectrolyte) was able to disrupt this interaction by displacing rhTNF-beta from the charge complex.

L22 ANSWER 6 OF 10 MEDLINE on STN
ACCESSION NUMBER: 97177815 MEDLINE

DOCUMENT NUMBER: PubMed ID: 9025321
TITLE: Polyelectrolyte complexes as vehicles for affinity precipitation of proteins.
AUTHOR: Dissing U; Mattiasson B
CORPORATE SOURCE: Department of Biotechnology, Lund University, Sweden.
SOURCE: Journal of biotechnology, (1996 Nov 29) Vol. 52, No. 1, pp. 1-10.
Journal code: 8411927. ISSN: 0168-1656.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Biotechnology
ENTRY MONTH: 199703
ENTRY DATE: Entered STN: 21 Mar 1997
Last Updated on STN: 21 Mar 1997
Entered Medline: 13 Mar 1997

AB Polyelectrolyte complexes (PECs) were formed with polyethylene imine (PEI) and polyacrylic acid sodium salt (PA). The aqueous solubility of such PLCs is dependent on the stoichiometry between the polymers, the charge densities of the polymers and salts present in the solution. Cibacron blue 3GA (CB) was coupled to the PEI and the PECs were used for affinity precipitation of lactate dehydrogenase (LDH) in beef heart extracts. The affinity precipitation was induced by a shift in pH, while the desorption and separation of LDH from the PECs was performed by addition of KCl combined with a shift in pH. LDH was obtained with a yield of 85% and a purification factor of approx. 11-fold. The polymers were recovered and reused once and the results became similar. Prior to the affinity precipitation, interfering nucleic acids were removed by precipitation with PEI.

L22 ANSWER 7 OF 10 MEDLINE on STN
ACCESSION NUMBER: 97137875 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8983212
TITLE: beta-Lactamase recovery from E. coli cell lysate via two-phase electrophoresis.
AUTHOR: Oehler R D; Clark W M
CORPORATE SOURCE: Chemical Engineering Department, Worcester Polytechnic Institute, Worcester, Massachusetts 01609, USA.
SOURCE: Biotechnology progress, (1996 Nov-Dec) Vol. 12, No. 6, pp. 873-6.
Journal code: 8506292. ISSN: 8756-7938.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Biotechnology
ENTRY MONTH: 199702
ENTRY DATE: Entered STN: 19 Feb 1997
Last Updated on STN: 19 Feb 1997
Entered Medline: 4 Feb 1997

AB beta-Lactamase was recovered from Escherichia coli cell lysate by a novel cell debris removal method using two-phase electrophoresis. The cells were harvested by centrifugation after fermentation, resuspended in a low ionic strength electrophoresis buffer, lysed, and combined with a poly(ethylene glycol)/dextran aqueous two-phase system in the same buffer. The cell lysate was subjected to a 40 V/cm electric field oriented perpendicular to the phase interface for 90 min. Experiments were conducted both with and without a nucleic acid precipitation step using poly(ethylene imine) (PEI). For PEI-treated lysate at pH 5, the positively charged beta-lactamase was directed to the upper phase, while negatively charged contaminants (including cell debris, nucleic acid/ PEI precipitates, and negatively charged proteins) were

directed to the lower phase with the applied field. beta-Lactamase yield in the upper phase was 81%, while cell debris and nucleic acids partitioned almost exclusively to the lower phase. For untreated lysate, beta-lactamase did not move in the electric field due to strong interaction with nucleic acids in solution.

L22 ANSWER 8 OF 10 MEDLINE on STN
ACCESSION NUMBER: 94220859 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8167476
TITLE: Rapid purification of recombinant human tumor necrosis factor beta.
AUTHOR: Loh K C; Yao Z J; Yap M G; Chung M C
CORPORATE SOURCE: Bioprocessing Technology Unit, National University of Singapore.
SOURCE: Protein expression and purification, (1994 Feb) Vol. 5, No. 1, pp. 70-5.
Journal code: 9101496. ISSN: 1046-5928.
PUB. COUNTRY: United States
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199405
ENTRY DATE: Entered STN: 13 Jun 1994
Last Updated on STN: 6 Feb 1998
Entered Medline: 27 May 1994

AB A rapid and improved method for the purification of recombinant human tumor necrosis factor beta (rhTNF-beta) from Escherichia coli HB 101 cells has been developed. The method utilized sequential steps of polyethylenimine (PEI) and ammonium sulfate precipitation to remove most of the extraneous proteins and nucleic acids from the cell extracts. The final step of purification consisted of DEAE-Sepharose chromatography at pH 7.5 in which rhTNF-beta was eluted with starting buffer. This procedure, when compared to the earlier methods of purification, is highly efficient since we could increase the overall yield of rhTNF-beta and reduce the purification time considerably. The final yield that we obtained from 1 liter of fermentation broth (containing approximately 80 g of wet cells) was 40-50 mg.

L22 ANSWER 9 OF 10 MEDLINE on STN
ACCESSION NUMBER: 94003376 MEDLINE
DOCUMENT NUMBER: PubMed ID: 7764131
TITLE: Production & purification of recombinant tumour necrosis factor-beta.
AUTHOR: Mak K W; Loh K C; Yap M G
CORPORATE SOURCE: Department of Chemical Engineering, National University of Singapore.
SOURCE: Australasian biotechnology, (1993 Jul-Aug) Vol. 3, No. 4, pp. 206-12.
Journal code: 9113681. ISSN: 1036-7128.
PUB. COUNTRY: Australia
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Biotechnology
ENTRY MONTH: 199311
ENTRY DATE: Entered STN: 9 Aug 1995
Last Updated on STN: 6 Feb 1998
Entered Medline: 23 Nov 1993

AB The effects of medium composition, temperature and tryptophan concentration on the growth and expression of a recombinant E. coli producing human tumour necrosis factor-beta (TNF-beta) were examined in shake flask cultures. We found that lower cultivation temperatures of 25 degrees C and 30 degrees C gave the best yield of soluble TNF-beta. A

higher expression of total TNF-beta was obtained in defined medium. Fed-batch fermentations further confirmed that a lower mu was critical to obtaining high TNF-beta expression. This was shown to be due to the dilution effect at high mu, which affected the cell plasmid content. We found that we were unable to repress TNF-beta expression with tryptophan and TNF-beta was expressed in non-induced cultures. This has been attributed to the nature of the constructed clone, which is a low aporepressor producer, but carried a high copy number plasmid with a mutated rom gene. A rapid and improved method for the purification of TNF-beta has also been developed. The method utilised sequential steps of polyethyleneimine (PEI) and ammonium sulphate precipitation to remove most of the extraneous proteins and nucleic acids from the cell extracts. This was followed by DEAE chromatography. This procedure was found to be highly efficient and was used to purify large quantities of TNF-beta. Compared to an earlier protocol which did not include the PEI step, yields were higher and processing time was much shorter.

L22 ANSWER 10 OF 10 MEDLINE on STN
ACCESSION NUMBER: 91103927 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1366764
TITLE: Precipitation of nucleic acids with poly(ethyleneimine).
AUTHOR: Cordes R M; Sims W B; Glatz C E
CORPORATE SOURCE: Department of Chemical Engineering, Iowa State University, Ames 50011.
SOURCE: Biotechnology progress, (1990 Jul-Aug) Vol. 6, No. 4, pp. 283-5.
Journal code: 8506292. ISSN: 8756-7938.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
(RESEARCH SUPPORT, U.S. GOV'T, NON-P.H.S.)
LANGUAGE: English
FILE SEGMENT: Biotechnology
ENTRY MONTH: 199102
ENTRY DATE: Entered STN: 9 Aug 1995
Last Updated on STN: 9 Aug 1995
Entered Medline: 25 Feb 1991

AB Removal of nucleic acids from cell extracts is a common early step in downstream processing for protein recovery. We report on the precipitation of nucleic acids from a homogenate of Saccharomyces cerevisiae by addition of the cationic polyelectrolyte poly(ethyleneimine) (PEI), focusing on the effect of PEI dosage on particle size, protein loss, and extent of nucleic acid removal in both batch and continuous mode. Better than 95% removal of nucleic acids from yeast homogenates was achieved by means of precipitation with PEI with protein losses of approximately 15% with or without previous removal of cell debris. The coprecipitated protein is predominately large molecular weight material and exhibits both low and high isoelectric points. Such treatment does not aggregate the cell debris; size distribution of the precipitated particles from a continuous precipitator is very similar to that for protein precipitation.

L24 ANSWER 1 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:20859 CAPLUS
DOCUMENT NUMBER: 140:54473
TITLE: Methods for isolating nucleic acids using a polycationic polymer as precipitation agent
INVENTOR(S): Galaev, Igor Yurii; Gustavsson, Per-Erik; Izumrudov, Vladimir A.; Larsson, Per-Olof; Wahlund, Per-Olof
PATENT ASSIGNEE(S): Amersham Biosciences AB, Swed.
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004003200	A1	20040108	WO 2003-SE1127	20030626
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2488616	A1	20040108	CA 2003-2488616	20030626
AU 2003243108	A1	20040119	AU 2003-243108	20030626
EP 1517990	A1	20050330	EP 2003-761887	20030626
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2005531329	T	20051020	JP 2004-548907	20030626
US 2005222404	A1	20051006	US 2005-517227	20050518

PRIORITY APPLN. INFO.:		
SE 2002-2074	A	20020628
SE 2003-1034	A	20030408
WO 2003-SE1127	W	20030626

AB The present invention relates to a methods for isolating nucleic acids using polycationic polymers as precipitating agent. The polycationic precipitating agent is preferably added in such an amount that the charge ratio [+] / [-] between polycationic precipitating agent and nucleic acid is ≥ 0.5, preferably ≥ 0.9 and most preferably ≥1 during the precipitation, and in the presence of a salt concentration ensuring the quant. specific precipitation of the nucleic acid/polycation complex. These agents include Poly(N,N'-dimethyldiallylammonium chloride), aliphatic ionene bromide and Poly(N-alkyl-4-vinylpyridinium halide).
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 2 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:658654 CAPLUS
DOCUMENT NUMBER: 140:177680
TITLE: Phase separations in water-salt solutions of polyelectrolyte complexes formed by RNA and polycations: Comparison with DNA complexes
AUTHOR(S): Wahlund, Per-Olof; Izumrudov, Vladimir A.; Gustavsson, Per-Erik; Larsson, Per-Olof; Galaev, Igor Yu.
CORPORATE SOURCE: Department of Biotechnology, Center for Chemistry and Chemical Engineering, Lund University, Lund, S-221 00, Swed.

SOURCE: Macromolecular Bioscience (2003), 3(8), 404-411
CODEN: MBAIBU; ISSN: 1616-5187
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Formation of insol. polyelectrolyte complexes (PECs) between RNA and polycations was followed by measuring the residual RNA absorbance in the solution after separation of the precipitate The polycations studied were poly(N,N'-dimethyldiallylammonium) chloride (pendant type) and 2,5-ionene bromide (integral type) with quaternary amino groups in every monomer unit. The data obtained were compared with the results of analogous studies of DNA-containing PECs. This study is a part of a project aimed at the specific separation of plasmid DNA from RNA, a major problem in the preparative isolation of plasmid DNA.
We thus deliberately chose a heterogeneous RNA sample as it represents the RNA present in a real cell extract In contrast to the exhaustive precipitation of DNA observed at certain ϕ values, a significant part of RNA was nonpptd. at any ϕ = [+]/[-], i.e., at any ratio of pos. charged quaternary amino groups and neg. charged phosphate groups. The addition of sodium chloride increased the nonpptd. fraction of RNA. DNA, on the other hand, was completely precipitated by both polycations at $\phi > 0.7$. The less effective precipitation of RNA was probably due to the presence of a considerable fraction of short-chained mols., incapable of forming a sufficient cooperative system of salt bonds with the polycation.
This assumption was supported by a sep. experiment, in which the precipitation behavior of RNA fractions of different mol. masses was investigated. The same tendency, while less pronounced, was also ascertained for PECs formed by polycations with DNA fractions of different mol. masses. The possibility of using the revealed differences between DNA and RNA behavior for effective precipitation procedure useful in biosepn. is discussed. The difference in the precipitation behavior of nucleic acids of different mol. masses means there is a possibility for developing an enzymic assay for DNAase and RNAase activity.

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 3 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2001:137722 CAPLUS
DOCUMENT NUMBER: 134:344481
TITLE: Polyinosinic acid and polycationic liposomes attenuate the hepatic clearance of circulating plasmid DNA
AUTHOR(S): Minchin, Rodney F.; Carpenter, Denise; Orr, Rebecca J.
CORPORATE SOURCE: Laboratory for Cancer Medicine, Western Australian Institute for Medical Research, Royal Perth Hospital and Department of Pharmacology, University of Western Australia, Perth, Australia
SOURCE: Journal of Pharmacology and Experimental Therapeutics (2001), 296(3), 1006-1012
CODEN: JPETAB; ISSN: 0022-3565
PUBLISHER: American Society for Pharmacology and Experimental Therapeutics
DOCUMENT TYPE: Journal
LANGUAGE: English

AB DNA that enters the circulation is rapidly cleared both by tissue uptake and by DNase-mediated degradation In this study, we have examined the uptake of linear plasmid DNA in an isolated perfused liver model and following intra-arterial administration to rats. We found that the DNA was rapidly taken up by the isolated perfused liver without degradation The single-pass extraction ratio was 0.76 ± 0.05, the mean transit time was 15.3 ± 3.6 s, and the volume of distribution was 0.29 ± 0.07

mL/g. Hepatic uptake was saturable and was inhibited by polyinosinic acid or polycationic liposomes but not by condensation of the DNA with polylysine. When the linear plasmid DNA was administered in vivo, plasma half-life was 3.1 ± 0.2 min, volume of distribution was 670 ± 85 mL/kg, and clearance was 32 ± 4 mL/min. Coadministration of cationic liposomes decreased the volume of distribution to 180 ± 28 mL/kg as well as the half-life (2.6 ± 0.2 min). By contrast, polyinosinic acid significantly increased the circulating half-life (7.7 ± 0.5 min), decreased the volume of distribution (95 ± 17 mL/kg), and partially inhibited DNA degradation When administered along with the liposomes and the polyinosinic acid, the distribution of plasmid -derived radioactivity decreased in the liver and increased in most other peripheral tissues. This study shows that pharmacol. manipulation of the uptake and degradation of DNA can alter its distribution and clearance in vivo. These results may be useful in optimizing gene delivery procedures for in vivo gene therapy.

REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 4 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:227595 CAPLUS

DOCUMENT NUMBER: 131:13301

TITLE: Metabolic instability of plasmid DNA in the cytosol: a potential barrier to gene transfer

AUTHOR(S): Lechardeur, D.; Sohn, K.-J.; Haardt, M.; Joshi, P. B.; Monck, M.; Graham, R. W.; Beatty, B.; Squire, J.; O'Brodovich, H.; Lukacs, G. L.

CORPORATE SOURCE: Program in Cell and Lung Biology and Lung Gene Therapy, Hospital for Sick Children, Toronto, ON, M5G 1X8, Can.

SOURCE: Gene Therapy (1999), 6(4), 482-497
CODEN: GETHEC; ISSN: 0969-7128

PUBLISHER: Stockton Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Inefficient nuclear delivery of plasmid DNA is thought to be one of the daunting hurdles to gene transfer, utilizing a nonviral delivery system such as a polycation-DNA complex. Following its internalization by endocytosis, plasmid DNA has to be released into the cytosol before its nuclear entry can occur. However, the stability of plasmid DNA in the cytoplasm, which may play a determinant role in the transfection efficiency, is not known. The turnover of plasmid DNA, delivered by microinjection into the cytosol, was determined by fluorescence in situ hybridization (FISH) and quant. single-cell fluorescence video-image anal. Both single- and double-stranded circular plasmid DNA disappeared with an apparent half-life of 50-90 min from the cytoplasm of HeLa and COS cells, while the amount of co-injected dextran (MW 70 000) remained unaltered. We propose that cytosolic nuclease(s) are responsible for the rapid degradation of plasmid DNA, since (1) elimination of plasmid DNA cannot be attributed to cell division or to the activity of apoptotic and lysosomal nucleases; (2) disposal of microinjected plasmid DNA was inhibited in cytosol-depleted cells or following the encapsulation of DNA in phospholipid vesicles; (3) generation and subsequent elimination of free 3'-OH ends could be detected by the terminal deoxynucleotidyl transferase-mediated dUTP nick end-labeling assay (TUNEL), reflecting the fragmentation of the injected DNA; and, finally, (4) isolated cytosol, obtained by selective permeabilization of the plasma membrane, exhibits divalent cation-dependent, thermolabile nuclease activity, determined by Southern blotting and 32P-release from end-labeled DNA. Collectively, these findings suggest that the metabolic instability of plasmid DNA, caused by cytosolic nuclease, may constitute a previously unrecognized impediment for DNA translocation into the nucleus and a possible target to enhance the efficiency of gene delivery.

REFERENCE COUNT: 67 THERE ARE 67 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 5 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1998:331218 CAPLUS
DOCUMENT NUMBER: 129:76462
TITLE: In vitro myotoxicity of selected cationic macromolecules used in non-viral gene delivery
AUTHOR(S): Brazeau, Gayle A.; Attia, Steve; Poxon, Scott; Hughes, Jeffrey A.
CORPORATE SOURCE: Department of Pharmaceutics, College of Pharmacy, University of Florida, Gainesville, FL, 32610, USA
SOURCE: Pharmaceutical Research (1998), 15(5), 680-684
CODEN: PHREEB; ISSN: 0724-8741
PUBLISHER: Plenum Publishing Corp.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Cationic lipid/DNA complexes have been proposed as a method of in vivo gene delivery via i.v. or i.m. injection. A concern with using these polycationic mols. is whether they are associated with tissue toxicity at the injection site. Therefore, the objective of these studies was to investigate the myotoxic potential of selected non-viral gene delivery macromols. (e.g., cationic lipids and polymers) with and without plasmid DNA (pDNA) in vitro. Myotoxicity was assessed by the cumulative release of creatine kinase (CK) over 90 min from the isolated rodent extensor digitorum longus muscle into a carbogenated balanced salt solution (BBS, pH 7.4, 37°) following a 15 μL injection of the test formulation. Phenytoin (Dilantin) and normal saline served as pos. and neg. controls, resp. The myotoxicity of plasmid DNA (pDNA, .apprx.5000 bp. 1 mg/ ml) was not statistically different from normal saline. However, the myotoxicity of Dilantin was 16-times higher than either normal saline or pDNA. Cationic liposomes were less myotoxic than polylysine and PAMAM dendrimers. Polylysine's myotoxicity was dependent upon concentration and mol. weight The myotoxicity of formulations of cationic liposomes(s), lower mol. weight polylysine (25,000) and higher concentration of PAMAM dendrimers with pDNA were statistically less significant than those formulations without pDNA. The cationic liposomes were less myotoxic compared to the dendrimers and polylysine. Myotoxicity was dependent upon the type of cationic lipid macromol., concentration, mol. weight and the presence of pDNA. A possible explanation for this reduced tissue damage in cationic lipids complexed with pDNA is that the formation of complex reduces the overall pos. charge of the injectable system resulting in less damage.
REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 6 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1997:452415 CAPLUS
DOCUMENT NUMBER: 127:172215
TITLE: The interaction of plasmid DNA with polyamidoamine dendrimers: mechanism of complex formation and analysis of alterations induced in nuclease sensitivity and transcriptional activity of the complexed DNA
AUTHOR(S): Bielinska, Anna U.; Kukowska-Latallo, Jolanta F.; Baker, , James R. Jr.
CORPORATE SOURCE: Department of Internal Medicine, University of Michigan Medical School, Ann Arbor, MI, 48109-0666, USA
SOURCE: Biochimica et Biophysica Acta, Gene Structure and Expression (1997), 1353(2), 180-190
CODEN: BBGSD5; ISSN: 0167-4781

PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The application of synthetic vectors for gene transfer has potential advantages over virus-based systems. However, little is known about the mechanisms involved in binding of synthetic materials to DNA and the nature of the DNA complexes that result from this interaction. Polyamidoamine (PAMAM) dendrimers are unique polymers with defined spherical structure. Dendrimers bind DNA to form complexes that efficiently transfect cells in vitro. We examined the formation of DNA/dendrimer complexes and found it based entirely on charge interaction. Electronmicroscopic examination of the complexes indicated that the majority of the plasmid DNA is contracted into isolated toroids, but also revealed larger, irregular aggregates of polymer and DNA. The binding of plasmid DNA to dendrimer appears to alter the secondary and tertiary structure, but does not fragment the DNA or alter its primary structure. Complexed DNA is protected against degradation by either specific nucleases or cellular exts. containing nuclease activity. While the initiation of transcription in vitro from promoters (for either T7 polymerase or eukaryotic RNA polymerase II) in dendrimer-complexed DNA is inhibited, elongation of the RNA transcript and translation do not appear to be affected. These resemble alterations of the DNA function when complexed with naturally-occurring polycations like non-acetylated histones. However, DNA complexed to dendrimer appears to maintain transcriptional activity while histone complexes at similar charge ratios do not. These results elucidate some aspects of the interaction between PAMAM dendritic polymers and DNA, and could lead to improvements in the design of polymers or formation of DNA complexes that will increase the efficiency of non-viral gene transfer.

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 7 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1997:448066 CAPLUS
DOCUMENT NUMBER: 127:61632
TITLE: Dodecahedral adenoviral protein complex and its use in delivering bioactive substances to cells
INVENTOR(S): Chroboczek, Jadwiga; Fender, Pascal
PATENT ASSIGNEE(S): Commissariat A L'energie Atomique, Fr.; Centre National De La Recherche Scientifique (Cnrs); Chroboczek, Jadwiga; Fender, Pascal
SOURCE: PCT Int. Appl., 51 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
WO 9718317	A1	19970522	WO 1996-FR1790		19961113
W: JP, US					
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE					
FR 2741087	A1	19970516	FR 1995-13406		19951113
FR 2741087	B1	19980109			
FR 2747681	A1	19971024	FR 1996-4843		19960418
FR 2747681	B1	19980619			
EP 861329	A1	19980902	EP 1996-938303		19961113
EP 861329	B1	20050316			
R: CH, DE, ES, FR, GB, IT, LI, NL					
JP 2000500020	T	20000111	JP 1997-518629		19961113
US 6083720	A	20000704	US 1998-68650		19980731
PRIORITY APPLN. INFO.:			FR 1995-13406	A	19951113
			FR 1996-4843	A	19960418

WO 1996-FR1790 W 19961113

AB A native or recombinant adenoviral protein complex, a pharmaceutical composition containing said protein complex, and the uses thereof for treating and preventing human and animal diseases, are disclosed. Said adenoviral protein complex consists of either 12 pentons each including at least one fiber and a penton base but no other element from an adenovirus genome, said fiber(s) and said penton base being derived from one or more adenoviruses, said pentons being bound by the penton bases and forming a proteolytic enzyme-stable dodecahedral structure, said complex having a mol. weight between 4.8 + 106 and 6.6 + 106, and such complexes being known as dodecahedron-penton complexes; or 12 pentons bases but no other element from an adenovirus genome, said penton bases being derived from one or more adenoviruses and forming a proteolytic enzyme-stable dodecahedral structure, said complex having a mol. weight between 3.2 + 106 and 4 + 106, and such complexes being known as dodecahedron-base complexes. Dodecahedral protein complexes isolated from recombinant baculovirus-infected Sf21 cells were purified and combined with (1) bifunctional peptides comprising a polycationic domain fused to an adenovirus peptide, and (2) plasmid DNA. HeLa cells incubated with these complexes took up and expressed the reporter gene of the plasmid DNA.

L24 ANSWER 8 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1992:100331 CAPLUS
DOCUMENT NUMBER: 116:100331
TITLE: DNA interpolyelectrolyte complexes as a tool for efficient cell transformation
AUTHOR(S): Kabanov, A. V.; Astaf'eva, I. V.; Chikindas, M. L.; Rozenblat, G. F.; Kiselev, V. I.; Severin, E. S.; Kabanov, V. A.
CORPORATE SOURCE: Res. Cent. Mol. Diagn., Moscow, 113149, USSR
SOURCE: Biopolymers (1991), 31(12), 1437-43
CODEN: BIPMAA; ISSN: 0006-3525
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A tool was developed for enhancement of plasmid penetration into an intact cell, based on increasing DNA hydrophobicity via inclusion into a soluble interpolyelectrolyte complex (IPC) with polycations. The characteristics of formation of DNA IPC with synthetic polycations [poly(N-ethyl-4-vinylpyridinium)bromide (PVP) and PVP modified with 3% of N-cetyl-4-vinylpyridinium units (PVP-C)] were studied using ultracentrifugation and polyacrylamide gel electrophoresis methods. The conditions were established under which the mixing of DNA and polycation aqueous solns. results in the self-assembly of soluble IPC species. Incorporation of DNA into IPC results in the enhancement of DNA binding with isolated Bacillus subtilis membranes. A considerable increase in the efficiency of transformation of B. subtilis cells with pBC16 plasmid resulted from incorporation of the plasmid into the IPC with PVP and CVP.

L24 ANSWER 9 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1987:612903 CAPLUS
DOCUMENT NUMBER: 107:212903
TITLE: Transfection and stable expression of a dominant selective marker Ecogpt in a cultured cell line of the fish, Carassius auratus
AUTHOR(S): Isa, K.; Shima, A.
CORPORATE SOURCE: Fac. Sci., Univ. Tokyo, Tokyo, 113, Japan
SOURCE: Journal of Cell Science (1987), 88(2), 219-24
CODEN: JNCSAI; ISSN: 0021-9533
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The synthetic plasmid, pSV2-gpt, was transfected into the

cultured fish cells (RBCF-1 line) using polycation and DMSO. The maximum transfection frequency estimated by colony number in the selection medium was 585 transfectants/5 + 105 treated cells per 50 ng plasmid DNA. The isolated transfectants expressed the xanthine/guanine phosphoribosyltransferase (XGPRT) activity encoded by the plasmid DNA associated with the promoter of simian virus 40 (SV40). The resistance to mycophenolic acid and the XGPRT activity of every transfectant examined were stable, indicating the possibility that pSV2-gpt was integrated into the genomic DNA of the host fish cells. Apparently, the promoter in the early region of SV40 can function in cultured fish cells. This success in obtaining cultured fish cells with a dominant selective marker will provide a useful clue for somatic cell genetic studies of fish in the future.

L24 ANSWER 10 OF 14 MEDLINE on STN
ACCESSION NUMBER: 2001151447 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11181935
TITLE: Polyinosinic acid and polycationic liposomes attenuate the hepatic clearance of circulating plasmid DNA.
AUTHOR: Minchin R F; Carpenter D; Orr R J
CORPORATE SOURCE: Laboratory for Cancer Medicine, Western Australian Institute for Medical Research, Royal Perth Hospital and Department of Pharmacology, University of Western Australia, Perth, Western Australia..
rminchin@receptor.pharm.uwa.edu.au
SOURCE: The Journal of pharmacology and experimental therapeutics, (2001 Mar) Vol. 296, No. 3, pp. 1006-12.
Journal code: 0376362. ISSN: 0022-3565.
PUB. COUNTRY: United States
DOCUMENT TYPE: (IN VITRO)
Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200103
ENTRY DATE: Entered STN: 4 Apr 2001
Last Updated on STN: 4 Apr 2001
Entered Medline: 15 Mar 2001

AB DNA that enters the circulation is rapidly cleared both by tissue uptake and by DNase-mediated degradation. In this study, we have examined the uptake of linear plasmid DNA in an isolated perfused liver model and following intra-arterial administration to rats. We found that the DNA was rapidly taken up by the isolated perfused liver without degradation. The single-pass extraction ratio was 0.76 +/- 0.05, the mean transit time was 15.3 +/- 3.6 s, and the volume of distribution was 0.29 +/- 0.07 ml/g. Hepatic uptake was saturable and was inhibited by polyinosinic acid or polycationic liposomes but not by condensation of the DNA with polylysine. When the linear plasmid DNA was administered in vivo, plasma half-life was 3.1 +/- 0.2 min, volume of distribution was 670 +/- 85 ml/kg, and clearance was 32 +/- 4 ml/min. Coadministration of cationic liposomes decreased the volume of distribution to 180 +/- 28 ml/kg as well as the half-life (2.6 +/- 0.2 min). By contrast, polyinosinic acid significantly increased the circulating half-life (7.7 +/- 0.5 min), decreased the volume of distribution (95 +/- 17 ml/kg), and partially inhibited DNA degradation. When administered along with the liposomes and the polyinosinic acid, the distribution of plasmid-derived radioactivity decreased in the liver and increased in most other peripheral tissues. This study shows that pharmacological manipulation of the uptake and degradation of DNA can alter its distribution and clearance in vivo. These results may be useful in optimizing gene delivery procedures for in vivo gene therapy.

L24 ANSWER 11 OF 14 MEDLINE on STN
ACCESSION NUMBER: 1999405123 MEDLINE

DOCUMENT NUMBER: PubMed ID: 10476208
TITLE: Metabolic instability of plasmid DNA in the cytosol: a potential barrier to gene transfer.
AUTHOR: Lechardeur D; Sohn K J; Haardt M; Joshi P B; Monck M; Graham R W; Beatty B; Squire J; O'Brodovich H; Lukacs G L
CORPORATE SOURCE: Program in Cell and Lung Biology and Lung Gene Therapy, Hospital for Sick Children, Toronto, Ontario, Canada.
CONTRACT NUMBER: N01-HD-7-3263 (NICHD)
SOURCE: Gene therapy, (1999 Apr) Vol. 6, No. 4, pp. 482-97.
Journal code: 9421525. ISSN: 0969-7128.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199909
ENTRY DATE: Entered STN: 5 Oct 1999
Last Updated on STN: 5 Oct 1999
Entered Medline: 23 Sep 1999

AB Inefficient nuclear delivery of plasmid DNA is thought to be one of the daunting hurdles to gene transfer, utilizing a nonviral delivery system such as polycation-DNA complex. Following its internalization by endocytosis, plasmid DNA has to be released into the cytosol before its nuclear entry can occur. However, the stability of plasmid DNA in the cytoplasm, that may play a determinant role in the transfection efficiency, is not known. The turnover of plasmid DNA, delivered by microinjection into the cytosol, was determined by fluorescence in situ hybridization (FISH) and quantitative single-cell fluorescence video-image analysis. Both single- and double-stranded circular plasmid DNA disappeared with an apparent half-life of 50-90 min from the cytoplasm of HeLa and COS cells, while the amount of co-injected dextran (MW 70,000) remained unaltered. We propose that cytosolic nuclease(s) are responsible for the rapid-degradation of plasmid DNA, since (1) elimination of plasmid DNA cannot be attributed to cell division or to the activity of apoptotic and lysosomal nucleases; (2) disposal of microinjected plasmid DNA was inhibited in cytosol-depleted cells or following the encapsulation of DNA in phospholipid vesicles; (3) generation and subsequent elimination of free 3'-OH ends could be detected by the terminal deoxynucleotidyl transferase-mediated dUTP nick end-labeling assay (TUNEL), reflecting the fragmentation of the injected DNA; and finally (4) isolated cytosol, obtained by selective permeabilization of the plasma membrane, exhibits divalent cation-dependent, thermolabile nuclease activity, determined by Southern blotting and 32P-release from end-labeled DNA. Collectively, these findings suggest that the metabolic instability of plasmid DNA, caused by cytosolic nuclease, may constitute a previously unrecognized impediment for DNA translocation into the nucleus and a possible target to enhance the efficiency of gene delivery.

L24 ANSWER 12 OF 14 MEDLINE on STN
ACCESSION NUMBER: 1998281073 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9619774
TITLE: In vitro myotoxicity of selected cationic macromolecules used in non-viral gene delivery.
AUTHOR: Brazeau G A; Attia S; Poxon S; Hughes J A
CORPORATE SOURCE: Department of Pharmaceutics, University of Florida, College of Pharmacy, Gainesville 32610, USA..
brazeau@cop.health.ufl.edu
CONTRACT NUMBER: P01-AG10485-06 (NIA)
SOURCE: Pharmaceutical research, (1998 May) Vol. 15, No. 5, pp. 680-4.
Journal code: 8406521. ISSN: 0724-8741.

PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199807
ENTRY DATE: Entered STN: 23 Jul 1998
Last Updated on STN: 23 Jul 1998
Entered Medline: 14 Jul 1998

AB PURPOSE: Cationic lipid/DNA complexes have been proposed as a method of in vivo gene delivery via intravenous or intramuscular injection. A concern with using these polycationic molecules is whether they are associated with tissue toxicity at the injection site. Therefore, the objective of these studies was to investigate the myotoxic potential of selected non-viral gene delivery macromolecules (e.g., cationic lipids and polymers) with and without plasmid DNA (pDNA) in vitro.
METHODS: Myotoxicity was assessed by the cumulative release of creatine kinase (CK) over 90 minutes from the isolated rodent extensor digitorum longus muscle into a carbogenated balanced salt solution (BBS, pH 7.4, 37 degrees C) following a 15 microL injection of the test formulation. Phenytoin (Dilantin) and normal saline served as positive and negative controls, respectively. RESULTS: The myotoxicity of plasmid DNA (pDNA, approximately 5000bp, 1 mg/ml) was not statistically different from normal saline. However, the myotoxicity of Dilantin was 16-times higher than either normal saline or pDNA ($p < 0.05$). Cationic liposomes were found to be less myotoxic than polylysine and PAMAM dendrimers. Polylysine's myotoxicity was found to be dependent upon concentration and molecular weight. The myotoxicity of formulations of cationic liposomes(s), lower molecular weight polylysine (25,000) and higher concentration of PAMAM dendrimers with pDNA were found to be statistically less significant than those formulations without pDNA.
CONCLUSIONS: The cationic liposomes were less myotoxic compared to the dendrimers and polylysine. Myotoxicity was dependent upon the type of cationic lipid macromolecule, concentration, molecular weight and the presence of pDNA. A possible explanation for this reduced tissue damage in cationic lipids complexed with pDNA is that the formation of complex reduces the overall positive charge of the injectable system resulting in less damage.

L24 ANSWER 13 OF 14 MEDLINE on STN
ACCESSION NUMBER: 97438237 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9294012
TITLE: The interaction of plasmid DNA with polyamidoamine dendrimers: mechanism of complex formation and analysis of alterations induced in nuclease sensitivity and transcriptional activity of the complexed DNA.
AUTHOR: Bielinska A U; Kukowska-Latallo J F; Baker J R Jr
CORPORATE SOURCE: Department of Internal Medicine, University of Michigan Medical School, Ann Arbor 48109-0666, USA.
CONTRACT NUMBER: R01 AI40286 (NIAID)
R43 CA68820 (NCI)
SOURCE: Biochimica et biophysica acta, (1997 Aug 7) Vol. 1353, No. 2, pp. 180-90.
Journal code: 0217513. ISSN: 0006-3002.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199709
ENTRY DATE: Entered STN: 8 Oct 1997
Last Updated on STN: 6 Feb 1998
Entered Medline: 25 Sep 1997

AB The application of synthetic vectors for gene transfer has potential

advantages over virus-based systems. However, little is known about the mechanisms involved in binding of synthetic materials to DNA and the nature of the DNA complexes that result from this interaction. Polyamidoamine (PAMAM) dendrimers are unique polymers with defined spherical structure. Dendrimers bind DNA to form complexes that efficiently transfect cells in vitro. We examined the formation of DNA/dendrimer complexes and found it based entirely on charge interaction. Electronmicroscopic examination of the complexes indicated that the majority of the plasmid DNA is contracted into isolated toroids, but also revealed larger, irregular aggregates of polymer and DNA. The binding of plasmid DNA to dendrimer appears to alter the secondary and tertiary structure, but does not fragment the DNA or alter its primary structure. Complexed DNA is protected against degradation by either specific nucleases or cellular extracts containing nuclease activity. While the initiation of transcription in vitro from promoters (for either T7 polymerase or eukaryotic RNA polymerase II) in dendrimer-complexed DNA is inhibited, elongation of the RNA transcript and translation do not appear to be affected. These resemble alterations of the DNA function when complexed with naturally-occurring polycations like non-acetylated histones. However, DNA complexed to dendrimer appears to maintain transcriptional activity while histone complexes at similar charge ratios do not. These results elucidate some aspects of the interaction between PAMAM dendritic polymers and DNA, and could lead to improvements in the design of polymers or formation of DNA complexes that will increase the efficiency of non-viral gene transfer.

L24 ANSWER 14 OF 14 MEDLINE on STN
ACCESSION NUMBER: 92282032 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1840094
TITLE: DNA interpolyelectrolyte complexes as a tool for efficient cell transformation.
AUTHOR: Kabanov A V; Astafyeva I V; Chikindas M L; Rosenblat G F; Kiselev V I; Severin E S; Kabanov V A
CORPORATE SOURCE: Research Center of Molecular Diagnostics, USSR Ministry of Health, Moscow.
SOURCE: Biopolymers, (1991 Oct 15) Vol. 31, No. 12, pp. 1437-43. Journal code: 0372525. ISSN: 0006-3525.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE) (RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199207
ENTRY DATE: Entered STN: 17 Jul 1992
Last Updated on STN: 17 Jul 1992
Entered Medline: 6 Jul 1992

AB A tool was developed for enhancement of plasmid penetration into an intact cell, based on increasing DNA hydrophobicity via inclusion into a soluble interpolyelectrolyte complex (IPC) with polycations. The characteristics of formation of DNA IPC with synthetic polycations [poly(N-ethyl-4-vinylpyridinium)bromide (PVP) and PVP modified with 3% of N-cetyl-4-vinylpyridinium units (PVP-C)] were studied using ultracentrifugation and polyacrylamide gel electrophoresis methods. The conditions were established under which the mixing of DNA and polycation aqueous solutions results in the self-assembly of soluble IPC species. Incorporation of DNA into IPC results in the enhancement of DNA binding with isolated Bacillus subtilis membranes. A considerable increase in the efficiency of transformation of B. subtilis cells with pBC16 plasmid resulted from incorporation of the plasmid into the IPC with PVP and CVP.

L25 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:721078 CAPLUS
DOCUMENT NUMBER: 141:423339
TITLE: Precipitation by polycation as capture step in purification of plasmid DNA from a clarified lysate
AUTHOR(S): Wahlund, P.-O.; Gustavsson, P.-E.; Izumrudov, V. A.; Larsson, P.-O.; Galaev, I. Yu.
CORPORATE SOURCE: Department of Biotechnology, Center for Chemistry and Chemical Engineering, Lund University, Lund, S-221 00, Swed.
SOURCE: Biotechnology and Bioengineering (2004), 87(5), 675-684
CODEN: BIBIAU; ISSN: 0006-3592
PUBLISHER: John Wiley & Sons, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The demand for highly purified plasmids in gene therapy and plasmid-based vaccines requires large-scale production of pharmaceutical-grade plasmid. Large-scale purification of plasmid DNA from bacterial cell culture normally includes one or several chromatog. steps. Prechromatog. steps include precipitation with solvents, salts, and polymers combined with enzymic degradation of nucleic acids. No method alone has so far been able to selectively capture plasmid DNA directly from a clarified alkaline lysate. We present a method for selective precipitation of plasmid DNA from a clarified alkaline lysate using polycation poly(N, N'-dimethyldiallylammonium) chloride (PDMDAAC). The specific interaction between the polycation and the plasmid DNA resulted in the formation of a stoichiometric insol. complex. Efficient removal of contaminants such as RNA, by far the major contaminant in a clarified lysate, and proteins as well as 20-fold plasmid concentration has been obtained with about 80% recovery. The method utilizes a inexpensive, com. available polymer and thus provides a capture step suitable for large-scale production
REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 2 OF 4 MEDLINE on STN
ACCESSION NUMBER: 2004442984 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15352066
TITLE: Precipitation by polycation as capture step in purification of plasmid DNA from a clarified lysate.
AUTHOR: Wahlund P-O; Gustavsson P-E; Izumrudov V A; Larsson P-O; Galaev I Yu
CORPORATE SOURCE: Department of Biotechnology, Center for Chemistry and Chemical Engineering, Lund University, P.O. Box 124, S-221 00, Lund, Sweden.
SOURCE: Biotechnology and bioengineering, (2004 Sep 5) Vol. 87, No. 5, pp. 675-84.
Journal code: 7502021. ISSN: 0006-3592.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE) (RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200502
ENTRY DATE: Entered STN: 8 Sep 2004
Last Updated on STN: 11 Feb 2005
Entered Medline: 10 Feb 2005
AB The demand for highly purified plasmids in gene therapy and

plasmid-based vaccines requires large-scale production of pharmaceutical-grade plasmid. Large-scale purification of plasmid DNA from bacterial cell culture normally includes one or several chromatographic steps. Prechromatographic steps include precipitation with solvents, salts, and polymers combined with enzymatic degradation of nucleic acids. No method alone has so far been able to selectively capture plasmid DNA directly from a clarified alkaline lysate. We present a method for selective precipitation of plasmid DNA from a clarified alkaline lysate using polycation poly(N, N'-dimethyldiallylammonium) chloride (PDMDAAC). The specific interaction between the polycation and the plasmid DNA resulted in the formation of a stoichiometric insoluble complex. Efficient removal of contaminants such as RNA, by far the major contaminant in a clarified lysate, and proteins as well as 20-fold plasmid concentration has been obtained with about 80% recovery. The method utilizes a inexpensive, commercially available polymer and thus provides a capture step suitable for large-scale production.

L25 ANSWER 3 OF 4 MEDLINE on STN
ACCESSION NUMBER: 2004278623 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15177169
TITLE: Polyelectrolyte complexes as a tool for purification of plasmid DNA. Background and development.
AUTHOR: Wahlund Per-Olof; Gustavsson Per-Erik; Izumrudov Vladimir A; Larsson Per-Olof; Galaev Igor Yu
CORPORATE SOURCE: Department of Biotechnology, Center for Chemistry and Chemical Engineering, Lund University, PO Box 124, S-221 00 Lund, Sweden.
SOURCE: Journal of chromatography. B, Analytical technologies in the biomedical and life sciences, (2004 Jul 25) Vol. 807, No. 1, pp. 121-7.
Journal code: 101139554. ISSN: 1570-0232.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE) (RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200504
ENTRY DATE: Entered STN: 6 Jun 2004
Last Updated on STN: 2 Apr 2005
Entered Medline: 1 Apr 2005
AB The demand for highly purified plasmids in gene therapy and plasmid-based vaccines requires large-scale production of pharmaceutical-grade plasmid. Plasmid DNA was selectively precipitated from a clarified alkaline lysate using the polycation poly(N,N'-dimethyldiallylammonium) chloride which formed insoluble polyelectrolyte complex (PEC) with the plasmid DNA. Soluble PECs of DNA with polycations have earlier been used for cell transformation, but now the focus has been on insoluble PECs. Both DNA and RNA form stable PECs with synthetic polycations. However, it was possible to find a range of salt concentration where plasmid DNA was quantitatively precipitated whereas RNA remained in solution. The precipitated plasmid DNA was resolubilised at high salt concentration and the polycation was removed by gel-filtration.

L25 ANSWER 4 OF 4 MEDLINE on STN
ACCESSION NUMBER: 94137804 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8305514
TITLE: Efficient transformation of mammalian cells using DNA interpolyelectrolyte complexes with carbon chain polycations.
AUTHOR: Kabanov A V; Astafieva I V; Maksimova I V; Lukanidin E M;

Georgiev G P; Kabanov V A
CORPORATE SOURCE: Moscow Institute of Biotechnology, Inc., Russia.
SOURCE: Bioconjugate chemistry, (1993 Nov-Dec) Vol. 4, No. 6, pp. 448-54.
Journal code: 9010319. ISSN: 1043-1802.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199403
ENTRY DATE: Entered STN: 30 Mar 1994
Last Updated on STN: 30 Mar 1994
Entered Medline: 15 Mar 1994

AB A new method for mammalian cell transformation is proposed which is based on incorporation of plasmids into interpolyelectrolyte complexes (IPECs) with carbon chain polycations. The method is illustrated by examples of pRSV CAT and p beta-Gal plasmid IPECs with poly(N-ethyl-4-vinylpyridinium bromide) (C2PVP) and poly(N-ethyl-4-vinylpyridinium)-poly(N-cetyl-4-vinylpyridinium+ ++) bromides random copolymer (C16PVP). These IPECs are produced spontaneously due to formation of a cooperative system of interchain electrostatic bonds after mixing DNA and polycation solutions. The interaction of IPEC with normal mouse fibroblasts NIH 3T3, human T-lymphoma "Jurkat", and Mardin Darby canine kidney cells has been studied. The data obtained has revealed that plasmid incorporation into IPECs significantly enhances both DNA adsorption on the plasma membrane and DNA uptake into a cell. The in vitro transformation of NIH 3T3 cells was monitored by a standard cloramphenicol acetyltransferase (CAT) assay (pRSV CAT plasmid) and by detection of beta-galactosidase (beta-Gal) expression using 4-methylumbeliferril beta-D-galactopyranoside as a substrate (p beta-Gal plasmid). In both cases it has been proved that IPEC-incorporated plasmids possess an ability for efficient cell transformation. The transforming activity of IPECs depends on their composition and polycation chemical structure. Under optimal conditions the efficiency of cell transformation with IPECs is several fold higher than that observed during standard calcium phosphate precipitation. The mechanism of the phenomenon observed is discussed. (ABSTRACT TRUNCATED AT 250 WORDS)

L26 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:292448 CAPLUS
DOCUMENT NUMBER: 139:32191
TITLE: Factors controlling phase separation in water-salt solutions of DNA and polycations
AUTHOR(S): Izumrudov, V. A.; Wahlund, P.-O.; Gustavsson, P.-E.; Larsson, P.-O.; Galaev, I. Yu.
CORPORATE SOURCE: Polymer Chemistry Department, Chemical Faculty, Moscow State University, Moscow, 119992, Russia
SOURCE: Langmuir (2003), 19(11), 4733-4739
CODEN: LANGD5; ISSN: 0743-7463
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Factors affecting phase separation in water-salt solns. of polyelectrolyte complexes (PECs), formed by DNA and integral or pendant polycations with a quaternary amino group in every monomer unit, have been studied. When no salt was added, quant. DNA precipitation occurred at a stoichiometric charge ratio, ϕ = [+]/[-] $\approx$ 1. In DNA mixts. with poly(N,N'-dimethyldiallylammonium chloride) (PDMDAAC, a pendant polycation), insol. PECs formed in the range 0.7 < ϕ < 2. This suggests the formation of soluble, neg. charged PECs at 0 < ϕ < 0.7 and soluble, pos. charged PECs at ϕ > 2. For different aliphatic ionene bromides (integral polycations), the range of ϕ corresponding to insol. PECs was significantly broader, mainly due to the poor ability of the ionenes to form soluble, pos. charged PECs. The ϕ range was also relatively broad for poly(N-ethyl-4 -vinylpyridinium bromide) (a pendant polycation) and became broader with decreasing d.p. of the polycation. The formation of insol. PECs was favored by the addition of salt (NaCl), and the effect was more pronounced when decreasing the relative content of the solubilizing component, i.e., the nucleic acid at ϕ < 1 and the polycation at ϕ > 1. At moderate ionic strength, 0.12 M < [NaCl] < 0.6 M, quant. precipitation of DNA was attained by addition of PDMDAAC in the whole region studied: 1 < ϕ < 4.5. The data obtained strongly suggest that phase separation in solns. of DNA-containing PECs follows general rules revealed by studying PECs formed by flexible vinyl polyanions. However, the high rigidity of the DNA double helix appears to be responsible for the key feature revealed in the phase diagrams, i.e., significant broadening of the region for insol. PECs at the expense of the region in which soluble DNA-containing PECs are formed. This feature may severely limit the application of DNA-containing PECs in medicine and biol. but could be beneficial in the development of simple and effective procedures for DNA separation in biotechnol.
REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1996:462423 CAPLUS
DOCUMENT NUMBER: 125:132802
TITLE: Polyether block copolymer-polynucleotide compositions and their preparation for enhanced transport of nucleic acids into cells
INVENTOR(S): Kabanov, Alexander Victorvich; Alakhov, Valery Yulievich; Vinogradov, Sergey V.
PATENT ASSIGNEE(S): Supratek Pharma, Inc., Can.
SOURCE: PCT Int. Appl., 49 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9615778	A1	19960530	WO 1995-US13800	19951117
W: AM, AU, BB, BG, BR, BY, CA, CN, CZ, EE, FI, GE, HU, IS, JP, KG, KP, KR, KZ, LK, LR, LT, LV, MD, MG, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TJ, TM, TT, UA, US, UZ, VN				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5656611	A	19970812	US 1994-342209	19941118
CA 2205486	A1	19960530	CA 1995-2205486	19951117
AU 9641965	A	19960617	AU 1996-41965	19951117
AU 716453	B2	20000224		
EP 789564	A1	19970820	EP 1995-940559	19951117
EP 789564	B1	20060322		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
BR 9509730	A	19970930	BR 1995-9730	19951117
CN 1173128	A	19980211	CN 1995-197357	19951117
JP 10509048	T	19980908	JP 1996-516861	19951117
NZ 297164	A	20000128	NZ 1995-297164	19951117
RU 2175337	C2	20011027	RU 1997-110289	19951117
AT 321133	T	20060415	AT 1995-940559	19951117
ES 2260765	T3	20061101	ES 1995-940559	19951117
PRIORITY APPLN. INFO.:			US 1994-342209 A	19941118
			WO 1995-US13800 W	19951117

AB The invention provides compns. for stabilizing polynucleic acids and increasing the ability of polynucleic acids to cross cell membranes and act in the interior of a cell. In one aspect, the invention provides a polynucleotide complex between a polynucleotide and certain polyether block copolymers. Preferably the polynucleotide complex will further include a polycationic polymer. In another aspect, the invention provides a polynucleotide complex between a polynucleotide and a block copolymer comprising a polyether block and a polycation block. In yet another aspect, the invention provides polynucleotides that have been covalently modified at their 5' or 3' end to attach a polyether polymer segment. In still another aspect, the invention provides certain preferred polycationic polymers. Examples include e.g the effect on the IC50 for daunomycin against multidrug-resistant ovarian cancer-derived cells (SKVLB) by a complex of a polyoxyethylene-polypropyleneimine/butyleneimine diblock copolymer with an oligonucleotide complementary to a MDR1 mRNA fragment. Cationic block copolymer synthesis and oligonucleotide conjugate synthesis are also included.

L27 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:20859 CAPLUS
DOCUMENT NUMBER: 140:54473
TITLE: Methods for isolating nucleic acids using a polycationic polymer as precipitation agent
INVENTOR(S): Galaev, Igor Yurii; Gustavsson, Per-Erik; Izumrudov, Vladimir A.; Larsson, Per-Olof; Wahlund, Per-Olof
PATENT ASSIGNEE(S): Amersham Biosciences AB, Swed.
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004003200	A1	20040108	WO 2003-SE1127	20030626
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2488616	A1	20040108	CA 2003-2488616	20030626
AU 2003243108	A1	20040119	AU 2003-243108	20030626
EP 1517990	A1	20050330	EP 2003-761887	20030626
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2005531329	T	20051020	JP 2004-548907	20030626
US 2005222404	A1	20051006	US 2005-517227	20050518
PRIORITY APPLN. INFO.:			SE 2002-2074 A	20020628
			SE 2003-1034 A	20030408
			WO 2003-SE1127 W	20030626

AB The present invention relates to a methods for isolating nucleic acids using polycationic polymers as precipitating agent. The polycationic precipitating agent is preferably added in such an amount that the charge ratio [+] / [-] between polycationic precipitating agent and nucleic acid is ≥ 0.5, preferably ≥ 0.9 and most preferably ≥1 during the precipitation, and in the presence of a salt concentration ensuring the quant. specific precipitation of the nucleic acid/polycation complex. These agents include Poly(N,N'-dimethyldiallylammonium chloride), aliphatic ionene bromide and Poly(N-alkyl-4-vinylpyridinium halide).
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:292448 CAPLUS
DOCUMENT NUMBER: 139:32191
TITLE: Factors controlling phase separation in water-salt solutions of DNA and polycations
AUTHOR(S): Izumrudov, V. A.; Wahlund, P.-O.; Gustavsson, P.-E.; Larsson, P.-O.; Galaev, I. Yu.
CORPORATE SOURCE: Polymer Chemistry Department, Chemical Faculty, Moscow State University, Moscow, 119992, Russia
SOURCE: Langmuir (2003), 19(11), 4733-4739
CODEN: LANGD5; ISSN: 0743-7463
PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal
LANGUAGE: English
AB Factors affecting phase separation in water-salt solns. of polyelectrolyte complexes (PECs), formed by DNA and integral or pendant polycations with a quaternary amino group in every monomer unit, have been studied. When no salt was added, quant. DNA precipitation occurred at a stoichiometric charge ratio, $\phi = [+]/[-] \approx 1$. In DNA mixts. with poly(N,N'-dimethyldiallylammonium chloride) (PDMDAAC, a pendant polycation), insol. PECs formed in the range $0.7 < \phi < 2$. This suggests the formation of soluble, neg. charged PECs at $0 < \phi < 0.7$ and soluble, pos. charged PECs at $\phi > 2$. For different aliphatic ionene bromides (integral polycations), the range of ϕ corresponding to insol. PECs was significantly broader, mainly due to the poor ability of the ionenes to form soluble, pos. charged PECs. The ϕ range was also relatively broad for poly(N-ethyl-4-vinylpyridinium bromide) (a pendant polycation) and became broader with decreasing d.p. of the polycation. The formation of insol. PECs was favored by the addition of salt (NaCl), and the effect was more pronounced when decreasing the relative content of the solubilizing component, i.e., the nucleic acid at $\phi < 1$ and the polycation at $\phi > 1$. At moderate ionic strength, $0.12 M < [NaCl] < 0.6 M$, quant. precipitation of DNA was attained by addition of PDMDAAC in the whole region studied: $1 < \phi < 4.5$. The data obtained strongly suggest that phase separation in solns. of DNA-containing PECs follows general rules revealed by studying PECs formed by flexible vinyl polyanions. However, the high rigidity of the DNA double helix appears to be responsible for the key feature revealed in the phase diagrams, i.e., significant broadening of the region for insol. PECs at the expense of the region in which soluble DNA-containing PECs are formed. This feature may severely limit the application of DNA-containing PECs in medicine and biol. but could be beneficial in the development of simple and effective procedures for DNA separation in biotechnol.
REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 3 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:234497 CAPLUS
DOCUMENT NUMBER: 139:96844
TITLE: DNA effect on the photoisomerization of naphthalenevinylpyridinium derivatives
AUTHOR(S): Chudak, M.; Juskowiak, B.
CORPORATE SOURCE: Department of Analytical Chemistry, Faculty of Chemistry, A. Mickiewicz University, Poznan, 60-780, Pol.
SOURCE: Polish Journal of Chemistry (2003), 77(3), 303-313
CODEN: PJCHDQ; ISSN: 0137-5083
PUBLISHER: Polish Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 139:96844
AB The binding, photoisomerization, and spectral behavior of the novel DNA interacting dyes 1-[2-(N-methylpyridinium-4-yl)vinyl]naphthalene iodide (1) and 2-[2-(N-methylpyridinium-4-yl)vinyl]naphthalene iodide (2) are reported. Ligand-DNA interactions were investigated by UV-Vis absorption and CD measurements. The ligands have different binding characteristics, depending on the structure of the isomers. The nonplanar cis isomers have lower affinity to DNA. Photoisomerization expts. in the absence and the presence of DNA showed significant differences in the composition of resulting photostationary states (pss). The lower values of pss in the presence of DNA indicate that trans → cis isomerization of DNA-bound ligands is suppressed, which leads finally to trans isomer-rich pss. Moreover, the quantum yield of trans → cis photoisomerization (ϕTC) decreased

dramatically.
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1999:819529 CAPLUS
DOCUMENT NUMBER: 132:60102
TITLE: Nucleic acid-coupled colorimetric analyte detectors using self-assembling polydiacetylenic materials
INVENTOR(S): Charych, Deborah H.; Jonas, Ulrich
PATENT ASSIGNEE(S): Regents of the University of California, USA
SOURCE: PCT Int. Appl., 176 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 11
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9967423	A1	19991229	WO 1999-US14029	19990622
W: AU, CA, JP				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
CA 2330937	A1	19991229	CA 1999-2330937	19990622
AU 9947047	A	20000110	AU 1999-47047	19990622
AU 748644	B2	20020606		
EP 1112377	A1	20010704	EP 1999-930522	19990622
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2004500006	T	20040108	JP 2000-556063	19990622

PRIORITY APPLN. INFO.:
US 1998-90266P P 19980622
US 1999-337973 A 19990621
WO 1999-US14029 W 19990622

AB The present invention relates to methods and compns. for the direct detection of analytes and membrane conformational changes through the detection of color changes in biopolymeric materials. In particular, the present invention provides for the direct colorimetric detection of analytes using nucleic acid ligands at surfaces or polydiacetylene liposomes and related mol. layer systems. Synthetic schemes are provided for the preparation and immobilization of polydiacetylenic materials with various head groups.
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 5 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1998:294993 CAPLUS
DOCUMENT NUMBER: 129:51090
TITLE: DNA sequence dependent binding modes of bis(vinylpyridinium)benzene derivatives
AUTHOR(S): Juskowiak, Bernard; Takenaka, Shigeori; Takagi, Makoto; Kondo, Hiroki
CORPORATE SOURCE: Dep. of Chemical Systems and Engineering, Graduate School of Engineering, Kyushu University, Fukuoka, 812, Japan
SOURCE: Nucleic Acids Symposium Series (1997), 37(Symposium on Nucleic Acids Chemistry, 1997), 265-266
CODEN: NACSD8; ISSN: 0261-3166
PUBLISHER: Oxford University Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The DNA binding selectivity of new dicationic ligands based on the bis(vinylpyridinium) benzene unit has been investigated by means of UV-Vis absorption spectroscopy. From the experiment results it is concluded that

these extended π-electron bridged viologens have relatively high affinity to AT base pair sequences whereas the binding to GC pairs is about 10 times lower, and binding affinity depends on minor variation in the ligand structure. Linear type ligand exhibits two binding mode interaction, intercalation at high dye concentration which undergoes switching to groove binding at low ligand concentration

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 6 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:462423 CAPLUS
DOCUMENT NUMBER: 125:132802
TITLE: Polyether block copolymer-polynucleotide compositions and their preparation for enhanced transport of nucleic acids into cells
INVENTOR(S): Kabanov, Alexander Victorvich; Alakhov, Valery Yulievich; Vinogradov, Sergey V.
PATENT ASSIGNEE(S): Supratek Pharma, Inc., Can.
SOURCE: PCT Int. Appl., 49 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9615778	A1	19960530	WO 1995-US13800	19951117
W: AM, AU, BB, BG, BR, BY, CA, CN, CZ, EE, FI, GE, HU, IS, JP, KG, KP, KR, KZ, LK, LR, LT, LV, MD, MG, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TJ, TM, TT, UA, US, UZ, VN				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5656611	A	19970812	US 1994-342209	19941118
CA 2205486	A1	19960530	CA 1995-2205486	19951117
AU 9641965	A	19960617	AU 1996-41965	19951117
AU 716453	B2	20000224		
EP 789564	A1	19970820	EP 1995-940559	19951117
EP 789564	B1	20060322		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
BR 9509730	A	19970930	BR 1995-9730	19951117
CN 1173128	A	19980211	CN 1995-197357	19951117
JP 10509048	T	19980908	JP 1996-516861	19951117
NZ 297164	A	20000128	NZ 1995-297164	19951117
RU 2175337	C2	20011027	RU 1997-110289	19951117
AT 321133	T	20060415	AT 1995-940559	19951117
ES 2260765	T3	20061101	ES 1995-940559	19951117
PRIORITY APPLN. INFO.:			US 1994-342209 A	19941118
			WO 1995-US13800 W	19951117

AB The invention provides compns. for stabilizing polynucleic acids and increasing the ability of polynucleic acids to cross cell membranes and act in the interior of a cell. In one aspect, the invention provides a polynucleotide complex between a polynucleotide and certain polyether block copolymers. Preferably the polynucleotide complex will further include a polycationic polymer. In another aspect, the invention provides a polynucleotide complex between a polynucleotide and a block copolymer comprising a polyether block and a polycation block. In yet another aspect, the invention provides polynucleotides that have been covalently modified at their 5' or 3' end to attach a polyether polymer segment. In still another aspect, the invention provides certain preferred polycationic polymers. Examples include e.g the effect on the IC50 for daunomycin against multidrug-resistant ovarian cancer-derived cells

(SKVLB) by a complex of a polyoxyethylene-polypropyleneimine/butyleneimine diblock copolymer with an oligonucleotide complementary to a MDR1 mRNA fragment. Cationic block copolymer synthesis and oligonucleotide conjugate synthesis are also included.

L27 ANSWER 7 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1973:93825 CAPLUS
DOCUMENT NUMBER: 78:93825
TITLE: Binding of naphthylvinylpyridines to DNA
AUTHOR(S): White, Helen L.; White, James R.; Cavallito, Chester J.
CORPORATE SOURCE: Dep. Biochem., Univ. North Carolina, Chapel Hill, NC, USA
SOURCE: Progress in Molecular and Subcellular Biology (1971), 2, 262-73
CODEN: PMSBA4; ISSN: 0079-6484
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The binding of trans-N-methyl-4-(1-naphthylvinyl) pyridinium cation (MNVP+) and 4-(1-naphthylvinyl) pyridine (NVP) to DNA was investigated in sedimentation, viscosity, melting transition, and spectrophotometric studies. The binding of MNVP+ and NVP to several ribonucleotide homopolymers was studied to ascertain any nucleotide base specificity. A polymeric structure, combining a purine, particularly guanine, with a phosphate backbone appeared to favor the binding of naphthylvinylpyridines. The number of available sites for binding the naphthylvinylpyridinium compds. to nucleic acids increased in the sequence native DNA < denatured DNA < polyriboguanylic acid. The number of available binding sites appeared similar with native DNA samples from M. lysodeikticus (72% G + C) and calf thymus (42%), but was decreased with DNA of C. perfringens (30%). While an interaction with the guanine moiety is definitely indicated by the observations with homopolymers, other bases in DNA must also participate. An electrostatic interaction between phosphates of DNA and pyridinium moieties of the ligand may be reinforced by interactions with 1 or 2 purine moieties on the opposite strand of the double helix. Ligand modification studies showed that the presence of an N-Me group instead of a proton apparently had little effect on binding parameters, since similar results were obtained with NVP and MNVP+ at pH 4.5. Analogs of MNVP+ were prepared having Ph or phenanthryl moieties in place of naphthyl. Association consts. for strong binding to DNA increased as follows: Ph < < naphthyl < phenanthryl. The maximum number of strong bonding sites was .apprx.1/5 bases for all 3 compds. at pH 7.4 and low ionic strength. Possible modes of intercalation are discussed.

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=> d his

     (FILE 'HOME' ENTERED AT 08:56:25 ON 23 JUN 2007)

     FILE 'CAPLUS, MEDLINE' ENTERED AT 08:56:48 ON 23 JUN 2007
L1             3 S NUCLEIC ACID? (P) POLYCATIONIC (P) ISOLAT?
L2             2 S NUCLEIC ACID? (P) POLYCATIONIC (P) PRECIPIT?
L3             2 S NUCLEIC ACID? (P) ?DIALLYLAMMONIUM (P) ISOLAT?
L4             1 S NUCLEIC ACID? (P) ?DIALLYLAMMONIUM (P) PRECIPI?
L5            70 S NUCLEIC ACID? (P) ?AMMONIUM (P) PRECIPI?
L6             2 S L5 AND CELL LYSATE?
L7             6 S L5 AND CATIONIC?
L8            41 S L5 AND POLY?
L9             5 S L8 AND QUATERN?
L10           36 S L8 NOT L9
L11            0 S L10 AND IONENE?
L12            0 S L10 AND ?PYRIDINIUM?
L13           54 S NUCLEIC ACID? (P) POLYCATIONIC (P) COMPLEX?
L14            1 S L13 AND PURI?
L15            0 S L13 AND CELL LYSATE?
L16           29 S L13 AND PROTEIN?
L17           25 S L13 NOT L16
L18            1 S NUCLEIC ACID? (P) POLYCATION (P) PRECIPIT?
L19            5 S NUCLEIC ACID? (P) POLYCATION (P) ISOLAT?
L20            0 S NUCLEIC ACID? (P) POLYCATIONS (P) PRECIPI?
L21            5 S NUCLEIC ACID? (P) ?POLYMER? (P) CHARGE? (P) PRECIPI?
L22           10 S NUCLEIC ACID? (P) PEI (P) PRECIPI?
L23            0 S NUCLEIC ACID? (P) DMDAAC
L24           14 S PLASMID? (P) POLYCATION? (P) ISOLAT?
L25            4 S PLASMID? (P) POLYCATION? (P) PRECIPI?
L26            2 S NUCLEIC ACID? (P)  "POLY(N-ETHYL-4-VINYLPYRIDINIUM BROMIDE)"
L27            7 S NUCLEIC ACID? (P) ?VINYLPYRIDINIUM?
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